AMERICAN AGRICULTURIST

FOR THE

Farm, Garden, and Household.

"AGRICULTURE IS THE MOST HEALTHFUL, MOST USEFUL, AND MOST NOBLE EMPLOYMENT OF MAN."—WASHINGTON.

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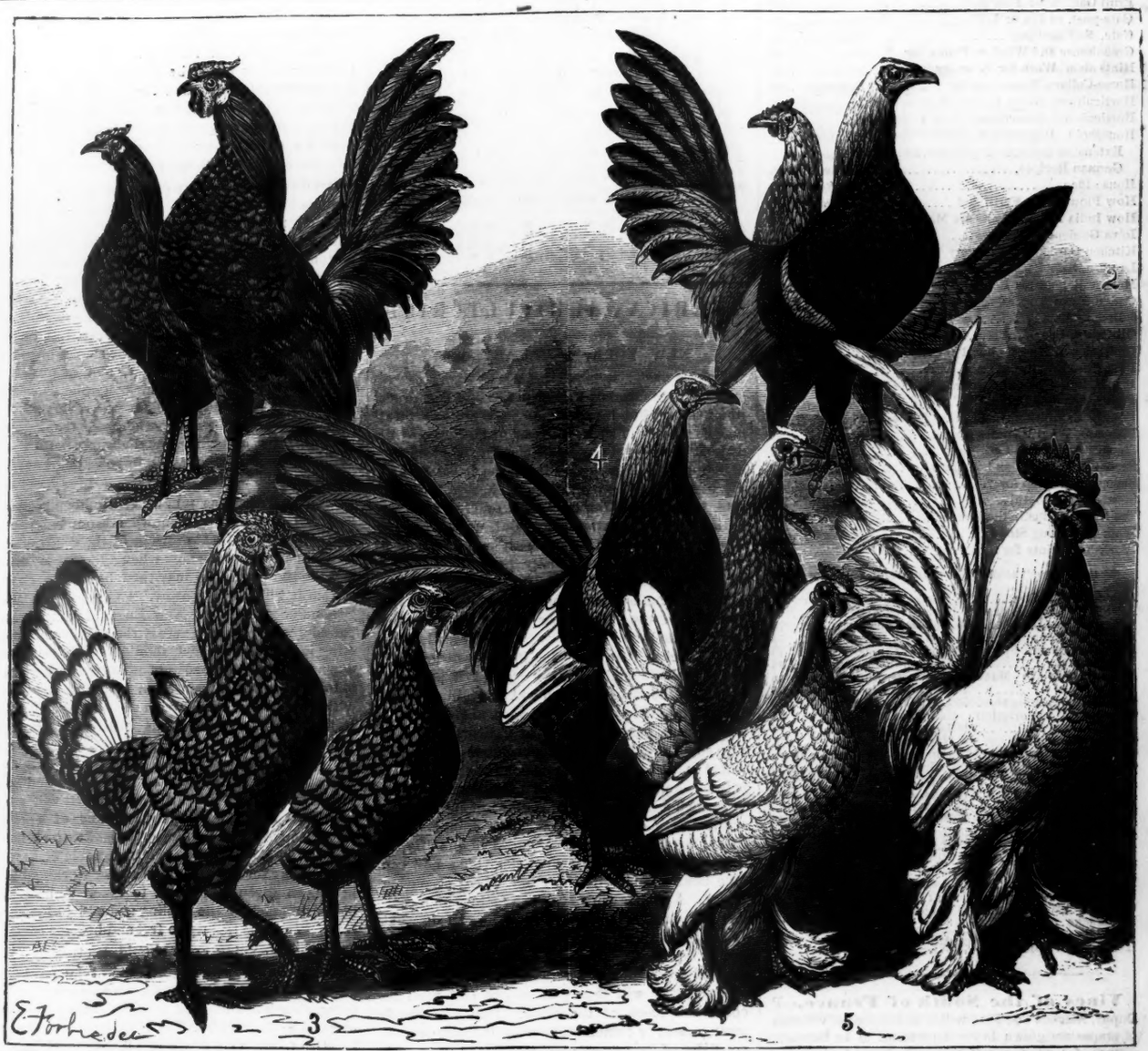

FIRST PREMIUM BANTAMS AT THE LONG ISLAND POULTRY EXHIBITION.—*Drawn and Engraved for the American Agriculturist.*

One who keeps fowls for profit, will doubtless look upon the Bantam with disrespect, if not with some degree of aversion. This is not to be wondered at, because their small size renders them insignificant as flesh or egg producers, and their pugnacity and officiousness in the poultry yard makes them a nuisance amongst other fowls. But where pleasure, and not profit, is the main pursuit of the poultry breeder, the Bantam occupies a very conspicuous place. As a pet for young people, it is also in great request, and it is much admired by them for its neat, handsome figure, its sprightliness, its activity and bravery. A Bantam hen and its brood of tiny chicks is a possession greatly desired and much treasured by the young people of the farm, however the older ones may dread their appearance in the garden or amongst the flowers. At the poultry show this class of birds is very attractive, and they are much sought after. At the recent exhibition of the Long Island Poultry Association, previously referred to, there was shown the best collection of Bantams we had so far seen. The above engraving contains portraits taken from life, of some of the rarest varieties of these birds, which all took first premiums. The pair numbered 1 in the picture, are the Black Bantams, owned by Smith & Bros., of Stony Brook, L. I.; No. 2 are Black Breasted Red Games, owned by D. Ingraham, Astoria, L. I.; No. 3, the Golden Seabrights, of W. H. Pullis, Bay Shore, L. I.; No. 4, the Yellow Duckwing Games, belonging to Thomas Smith, Stony Brook, L. I., and No. 5, White-booted Bantams, owned by H. S. Magrane, Newark, N. J.

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Vines of the South of France.—P

Dupuy, Alachua Co., Fla., writes to know what varieties of grapes are grown in the department of La Gironde, France, for wine, and if they will succeed with him. There is no one variety grown in any part of France, but each vineyard has that best suited to it, or several varieties, to ripen in succession. The number of kinds is very large, but the popular grape is the *Pinot* in some of its many sub-varieties, for there are a dozen or more *Pinots*, from white to black. Our correspondent has first to ascertain if any European grape will succeed in his locality, and then to find out by experiment, which are best suited to it. Unfortunately there is very little experience for his guidance, and if he would undertake to cultivate the wine grapes of the south of France, he must be a pioneer, and experiment. Some of the table grapes, such as Black Hamburgh and others, have been cultivated with success.

Calendar for February.

Day of Month.	Day of Week.	Boston, N. England, N. York State, Michigan, Wisconsin, Iowa, and Oregon. Sun rises.	Sun sets.	Mo'n sets.	N. Y. City, Ct., Philadelphia, New Jersey, Penn., Ohio, Indiana, and Illinois. Sun rises.	Sun sets.	Mo'n sets.	Washington, Maryland, Virginia, Kentucky, Missouri, and California. Sun rises.	Sun sets.	Mo'n sets.
		H. M.	H. M.	H. M.	H. M.	H. M.	H. M.	H. M.	H. M.	H. M.
1	T	7 14	5 14	11 59	7 10	5 18	11 56	7 6	5 22	11 53
2	W	7 13	5 15	morn	7 9	5 19	morn	7 5	5 23	morn
3	T	7 11	5 16	1 12	7 7	5 20	1 8	7 4	5 24	0 3
4	F	7 10	5 18	2 29	7 6	5 22	2 23	7 3	5 25	2 17
5	S	7 9	5 19	3 47	7 5	5 23	3 40	7 2	5 26	3 33
6	S	7 8	5 20	4 56	7 4	5 24	4 49	7 1	5 27	4 41
7	M	7 7	5 22	5 57	7 3	5 25	5 50	7 0	5 28	5 43
8	T	7 6	5 23	6 41	7 2	5 26	6 35	6 59	5 29	6 29
9	W	7 5	5 25	rises	7 1	5 28	rises	6 58	5 31	rises
10	T	7 4	5 26	6 45	7 0	5 29	6 47	6 57	5 32	6 49
11	F	7 2	5 27	7 54	6 59	5 30	7 54	6 56	5 33	7 55
12	S	7 1	5 29	9 3	6 58	5 31	9 1	6 55	5 34	9 1
13	S	7 0	5 30	10 10	6 57	5 32	10 8	6 54	5 35	10 6
14	M	6 58	5 31	11 17	6 56	5 33	11 13	6 53	5 36	11 10
15	T	6 57	5 33	morn	6 54	5 34	morn	6 52	5 38	morn
16	W	6 55	5 34	0 24	6 53	5 36	0 17	6 50	5 39	0 3
17	T	6 54	5 35	1 26	6 51	5 37	1 21	6 49	5 40	1 15
18	F	6 52	5 36	2 34	6 50	5 38	2 27	6 48	5 41	2 20
19	S	6 51	5 38	3 34	6 49	5 40	3 26	6 47	5 42	3 18
20	S	6 50	5 39	4 26	6 48	5 41	4 18	6 46	5 43	4 10
21	M	6 48	5 41	5 11	6 46	5 43	5 4	6 44	5 45	4 57
22	T	6 47	5 42	5 43	6 45	5 44	5 37	6 43	5 46	5 31
23	W	6 45	5 43	6 13	6 43	5 45	6 8	6 41	5 47	6 3
24	T	6 44	5 45	6 38	6 42	5 47	5 35	6 40	5 48	6 31
25	F	6 42	5 46	sets	6 40	5 48	sets	6 38	5 49	sets.
26	S	6 40	5 47	7 29	6 38	5 49	7 29	6 37	5 50	7 29
27	S	6 38	5 48	8 41	6 37	5 50	8 40	6 35	5 51	8 38
28	M	6 37	5 49	9 52	6 35	5 51	9 49	6 31	5 52	9 47
29	T	6 36	5 50	11 3	6 34	5 52	11 1	6 35	5 53	10 57

PHASES OF THE MOON.

MOON.	D.	BOSTON. H. M.	N. YORK. H. M.	WASH'N. H. M.	CHA'STON H. M.	CHICAGO. H. M.
1st Quart	2	9 9 ev.	8 57 ev.	8 45 ev.	8 33 ev.	8 3 ev.
Full M'n	9	1 3 ev.	0 51 ev.	0 39 ev.	0 27 ev.	11 57 mo.
3d Quart.	16	0 12 mo.	12 0 ev.	11 48 ev.	11 36 ev.	11 6 ev.
New M'n	25	1 36 ev.	1 24 ev.	1 12 ev.	1 0 ev.	0 30 ev.

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In modern farming there can not be a fair profit upon the capital invested, unless there is skillful management, and such a forecast of business as will make it necessary to pursue a certain steady course of cropping. This comes from the necessities of the case. Corn and grass, wheat, barley, roots, or oats, follow each other on a well ordered farm, or all is disorder and confusion. But, unfortunately, all farms are not well ordered, and there is a pressing need which actually prevents order on some farms, just as poverty forces makeshifts in some households. Something like this obliges the planter to grow cotton year after year, when he knows he is losing money by it. He loses less by making a crop, than by letting his fields go untilled, and he plants again, hoping against hope for a change in the market, which will bring him profit. But this method can not last always. Like growing wheat every year after year, in California, it must stop some day, just as the continuous growing of wheat in the Genessee valley came to an end. What is to be done? It is difficult to answer. If there were such a thorough organization among farmers, as there is of coal miners or cotton spinners, particular products might be reduced in quantity, to relieve the over-stocked markets, which now can take neither our cotton nor our wheat at paying prices. A farmer can not, like a factory or a coal-mine, run on "short time"; but he can do what amounts to the same thing, he can go on short acres; he can plant and sow less, and by spending less and producing less, get as much money for less produce. He will thus gain at one end what he could not reach at the other. That some such arrangement or combination is needed, the present condition of the two greatest markets in the world, those of cotton and wheat, show most conclusively.

Hints about Work.

The Cotton Crop.—It is important to consider the condition of the cotton markets, while there is time to change the plans for planting. Oats may yet be sown in the southern states, and this is the time to prepare the corn and potato ground. If it is thought desirable to plant less cotton than usual, this point must be decided now. It is certain that with a larger crop than is wanted, not only the surplus, but the whole supply of cotton falls in price, and the planter loses money. Had a million less bales of cotton been grown, or had they been burned, the three millions left would have sold last year, for more money than was received for the whole crop of four million bales.

The Wheat Crop.—The prospects for this crop are very doubtful at the present time. The latest advices from England, report 30 per cent less wheat in the market than last year, with only 44 per cent increase in price, and rates are still on the decline. If it were not that a large portion of our wheat has been held back, prices would have been much lower. What shall the grower of spring wheat do in this case? The Minnesota, Iowa, or Nebraska farmer must grow spring wheat or stop business, as the market for barley, oats, and corn is as easily over-stocked as that for wheat. This is the misfortune of his position as a purveyor to a foreign nation, which may not want his goods, and as a farmer in a state where almost every other man is a farmer, and where there are few or no manufacturing towns, in which he can find a home market. To remedy this, time, and the growth of other industries are needed. We can see no other help for it. Where corn can be grown readily and turned into pork for exportation, the experience of the past two years has been in favor of this crop.

Out-door Work.—There is enough of this to keep farmers busy everywhere. Gathering materials for manure, making composts of coarse materials, with cotton-seed and superphosphates for corn and cotton, top-dressing grass fields and for encouraging the growth of native pastures, plowing, fencing, and cleaning out water-courses, will employ southern farmers. At the north, there is fire-wood to cut and haul, rails to split, fence posts to hew and bore, ice to cut and put away, the smoke-house to look to, manure to turn over, and many other things to be done, that will make a quiet evening's rest over an instructive book or paper, very acceptable. Every farm has its special needs that require providing for, and when the February snows and sleets make out-door work impossible, but few hours need be wasted in-doors.

Roads.—There is as much need to keep roads in good repair during the snowy season, as in summer. Bare spots that are swept by the wind, should be packed over with snow when the sun is warm and the snow soft. It may then be beaten down, so that it will not drift away. "Cradle-holes," the "thank'ee-marms" of New England, may be repaired by laying brush across the hollow, and covering it with snow, which should be well trampled down. Where the roads are muddy, the best way is to temporarily repair them by filling the holes with brush, or by laying brush across the soft spots. It is useless to repair roads with earth or stone while they are wet.

Working Cattle.—Oxen should be well fed, and well carded every day, to bring them into good condition for spring work. A weak animal will soon give out under the first hot suns of spring. *Work the bulls.* A bull may be made to at least earn his feed. He will be more tractable and more trustworthy for it. Several plans for working bulls have been given from time to time. A bull had better do much of the hauling and odd jobs of the farm, than to be tied up to fret and become savage.

Cows.—In-coming cows should be treated with great care. The dry feed will have rendered them very liable to inflammatory diseases. Garget, milk-fever, abortion, and such troubles, affect well fed cows more than others. The blood needs cooling by laxative food. One quart of oil-cake meal, mixed with bran scalded, and given as a drink once a day, will be useful. No corn should be given for several weeks before calving. Bran or middlings will be more cooling and healthful, but if good hay is given, very little grain of any kind will be needed. Caution now will prevent trouble hereafter. When the calf is expected, the cow should be turned into a loose stall, or into a quiet stable alone.

Horses and Colts.—If cuts are found upon sharp-shod horses, about the feet or pasterns, wash the wounds with warm soap and water, and then apply a pinch of salt, or a little compound tincture of benzoin, which will cause them to heal rapidly.

Neglect of this precaution may cause a quittor or some other trouble, which will break out by-and-by, when the horse is needed for spring work. Sharp shod horses should not be permitted to play together in a yard, or with other animals. A kick from a playful horse may cause serious damage. Colts and yearlings should be tied in their stalls and taught proper discipline. They should be handled gently, and fed well and regularly. Give young stock of all kinds the best of food.

Sheep.—When rough, shreddy wool appears in the fleeces, or the wool drops off in locks, the sheep are not healthy, or the food has been too dry and heating. Stop the corn-meal, and give some linseed oil-cake meal; a few potatoes will be useful if roots are not to be had. Give salt frequently and freely. Keep nursing ewes by themselves, and give scalded bran or oatmeal daily. Sugar beets, or potatoes, sliced and sprinkled with a quart of middlings or bran, for each ewe, will produce abundant and rich milk. Keep lambs where they will have plenty of sunshine. Pick off ticks by hand; this may be done very rapidly by using a pair of small, sharp pointed scissors; part the wool, and when a tick is found clip it in two.

Swine.—Sows may now be turned to the boar for pigs in June. Sows expected to pig soon, should have warm pens, with cut straw or chaff for bedding. Rails fixed around the botton of the pens, six inches above the floor, and the same from the wall, will protect the young pigs from being crushed. In the south pigs need no more shelter than a rough roof in a wood lot. There is no better place for pigs than a small piece of woods well fenced, where they may run and make their own beds of leaves or earth. Straw beds, and especially a bed of manure, will cause irritation of the skin, if not skin diseases, and encourage parasites.

Sundry Matters.—The small things which need attention now, become numerous and pressing. The first thing that should be done, if it has not already been done, is to procure an account-book, and begin to keep accounts with the crops and stock. Another *very important* thing is to renew the subscription to the paper, whether it be the *American Agriculturist* or any other. The small amount of money required for this, can not be so well laid out in any other manner whatever. The wagons and carts need painting or repairing; the plows to be overhauled; harrow teeth pointed; seed to be selected or procured; harness to be repaired and cleaned; the thrashing machine and horse-power to be cleaned and oiled, and many other small but really important matters, will now need attention. These should be looked for with a sharp eye, "and when found, make a note of," or let them be attended to at once.

Work in the Horticultural Departments.

Advantage must be taken of all mild winter days to forward the spring work as fast as possible. There are always some little jobs which, unless done now, will be left undone in the hurry of spring work. Have everything around the house and outbuildings kept in a neat and orderly manner, and all rubbish removed whenever the ground is clear of snow. Provide absorbents for the manure from the stables and hennery, and see that the manure is kept both from overheating and from freezing.

Orchard and Nursery.

The full notes given under this head last month, will be in season now.

Insects.—During the mild days of the present month, the canker worms may make their appearance. The females cannot fly, but must crawl up the trunks. Their ascent is best prevented by the use of strips of paper coated with tar or printers' ink, and placed around the trunks; the tar or ink must be renewed whenever it becomes dry, or the dead insects bridge it over. Tent caterpillars' eggs are deposited in little rings near the ends of the twigs, and may be readily seen. A few hours or days even, spent in gathering and burning these eggs now, will save a great deal of labor in killing the caterpillars after they are hatched.

Varieties.—In planting new orchards for profit, select such varieties as are in demand, or if for family use, such as will give a good succession from early summer to late winter. Order trees for spring planting at once. If trees arrive in a frozen condition, put them in a cool place until thawed.

Cions.—Cut at any time in mild weather, label and bury in sawdust in sand or earth.

Fruit Garden.

Grape-Vines.—Make use of mild days for pruning those vines which were left during the hurry of the fall work, and apply ashes or ground bones between the rows. Save the wood for cuttings.

Dwarf Trees.—The present month is a good time to prune such trees as need it, as the shape and general direction of the branches is readily seen now that the leaves are off. Where the branches touch, and the bark is injured by rubbing, one of the branches should be cut out, or the two may be spread apart and tied so that they will not interfere.

Labels, Grafting-wax, etc.—Have ready all articles needed for use in the spring. Strips of calico or thin muslin loosely rolled upon a stick and dipped in melted grafting-wax are the most convenient forms in which to use the wax.

Currants and Gooseberries.—Prune any time before the buds swell.

Kitchen Garden.

But little can be done out of doors in the northern states at this season; see that everything is put in readiness for immediate use when wanted.

Seeds.—All which have to be bought should be ordered now. Those saved on the place should be sifted or otherwise cleaned and made ready for use. All old and doubtful seeds, especially those of parsnip, carrot, onion, and such as cannot be relied upon after the first year, should be burned. Have every parcel labelled with the date on the bags. Never trust to memory with seeds; when in doubt, get fresh ones.

Novelties are offered every year; these generally come with the claims of the European dealers that they are superior to the old standard sorts, but 9 out of 10 of them are seldom heard of after the first season. Trials of these novelties on a small scale are interesting, and once in a while we find a good thing, but never depend upon novelties for a crop.

Hot-beds.—The time to start these will depend upon the locality. Next month will be early enough north of Virginia. Six weeks before it will be safe to set out the plants, is the proper time. Store the horse manure where it will not get too wet, and turn it occasionally.

Cold Frames.—Remove the sashes entirely on mild days, and on cool days raise them at the back. Keep the plants in them as dormant as possible.

Root Cellars.—The past two months were very bad for preserving vegetables, as the weather was so warm that even with the doors and windows open, it has been scarcely possible to keep them from growing. When the doors are open, see that the roots are well covered to keep them from the light and from drying.

Tools.—Paint and put in order for use. Give unpainted wood-work a coat of crude petroleum to fill pores, so that moisture cannot enter.

Flower Garden and Lawn.

Generally only preparatory work can be done. If stable manure is to be applied to the lawn, it should be so thoroughly fined that no weed seeds remain. It is better to use stable manure elsewhere, and apply bone, ashes, or other fertilizers here. It is easy to bring in weeds, but very difficult to get rid of them....If any changes are to be made, new paths or beds, or transplanting of trees, have the work all planned out before-hand. Those who undertake ribbon planting or massing, should well consider the effect they wish to produce, and the materials for carrying it out. English examples of bedding are of no use here, as the plants serviceable for them are often quite worthless for us.

Greenhouse and Window Plants.

Plants in the greenhouse and windows should now be at their best.

Ventilation needs attention, especially on warm, clear days; changes are so sudden that this matter needs careful watching. Window plants need a supply of fresh air, but a current of cold air should not blow directly upon them.

Fires in the greenhouse now need special care; be ready for sudden changes.

Fumigation.—Give the greenhouse a thorough fumigation once or twice a week, and syringe the plants overhead the next day.

Bulbs.—Bring pots of hyacinths, narcissus, etc., from the cellar, to keep up a succession of flowers.

Annuals.—Sow seeds of Mignonette, Sweet Alyssum, Candytuft, and others, for early flowering.

Camellias.—Keep cool and syringe the foliage often, but do not wet the flowers.

Cuttings.—Preparation must be made for the needs of the garden by propagating Verbenas, Geraniums, and other bedding plants. If the temperature of the sand in the cutting bench or box is a few degrees higher than that of the air of the house, they will root rapidly.

Horticultural Notes for the Southern States.

The notes in January were intended to apply to the work for both that month and the present.

The Orchard may still have fertilizers applied; the trees pruned; the rough bark of old trunks scraped, and insects' eggs destroyed. If new trees are to be set, the soil should be manured and plowed, and made ready to plant the trees as soon as received.

Kitchen Garden.—Hardy vegetables generally may be sown, to follow those put in last month, and some of the more tender things, such as beans, may be risked; if no frost comes there is a decided gain, and if they are cut down, be ready to replant at once; the same may be said of squashes and melons, and others of that family. The time experience has shown to be the proper one in which to plant corn, will be safe for plants or seeds of tender vegetables. Sow sweet corn. Hot-beds will need airing; sow in them egg-plants and peppers, and tomatoes if not already done. Where tomatoes are large enough, transplant to another bed under glass. Transplant cabbages, lettuce, and other plants wintered in frames or otherwise.

Flower-Garden.—Success with roses depends largely on pruning; see last month's notes on these and other shrubs; sow seeds of hardy annuals, and propagate bedding plants. The heat of the sun will now demand close attention to ventilating greenhouses. Plants to be set out should be put into frames to harden off.

Commercial Matters—Market Prices.

The following condensed, comprehensive tables, carefully prepared specially for the *American Agriculturist*, from our daily record during the year, show at a glance the transactions for the month ending January 18, 1876, and for the corresponding month last year; also for the year ending Dec. 31, 1875:

1. TRANSACTIONS AT THE NEW YORK MARKETS.

Receipts.	Flour.	Wheat.	Corn.	Rye.	Barley.	Oats.
25 d's *this* m'th	332,000	735,000	1,017,000	39,000	231,000	586,000
26 d's *last* m'th	389,000	3,115,000	1,904,000	42,000	207,000	796,000
Sales.	**Flour.**	**Wheat.**	**Corn.**	**Rye.**	**Barley.**	**Oats.**
25 d's *this* m'th	393,000	2,814,000	1,871,000	47,000	284,000	1,918,000
26 d's *last* m'th	401,000	3,769,000	1,886,000	74,000	502,000	1,812,000

2. *Comparison with same period at this time last year.*

Receipts.	Flour.	Wheat.	Corn.	Rye.	Barley.	Oats.
25 days 1876	332,000	735,000	1,017,000	39,000	231,000	586,000
23 days 1875	324,000	459,000	1,617,000	13,800	57,000	407,000
Sales.	**Flour.**	**Wheat.**	**Corn.**	**Rye.**	**Barley.**	**Oats.**
25 days 1876	393,000	2,814,000	1,871,000	47,000	284,000	1,918,000
23 days 1875	291,000	2,911,000	1,918,000	34,000	251,000	2,105,000

3. *Stock of grain in store at New York.*

	Wheat. bush.	Corn. bush.	Rye. bush.	Barley. bush.	Oats. bush.	Malt. bush.
Jan. 10, 1876.	5,802,208	663,982	100,741	325,191	1,080,300	307,438
Dec. 7, 1875.	5,858,086	816,962	99,908	305,961	1,232,005	258,364
Nov. 8, 1875.	3,219,457	1,112,998	79,355	277,400	815,591	249,986
Oct. 11, 1875.	2,382,502	1,682,246	10,910	21,648	439,698	261,428
May 11, 1875.	969,804	1,542,924	16,124	16,537	544,209	229,055
Jan. 11, 1875.	3,675,122	1,019,900	50,889	191,470	877,014	145,617
Nov. 9, 1874.	3,630,141	1,727,510	19,123	117,135	791,722	135,882

4. *Receipts at head of tide-water at Albany each season to Dec. 1.*

	Flour. bbls.	Wheat. bush.	Corn. bush.	Rye. bush.	Barley. bush.	Oats. bush.
1875	113,600	21,393,200	8,781,800	250,900	3,833,600	3,105,300
1874	165,200	23,791,500	17,773,200	337,600	3,428,400	3,584,500
1873	158,300	22,761,700	18,552,300	930,260	2,153,300	3,385,900
1872	137,300	11,349,100	29,928,700	474,600	4,548,600	5,696,000
1871	200,700	21,313,100	20,042,300	1,107,900	3,839,100	6,639,400
1870	130,400	17,121,700	4,805,100	587,500	3,984,700	6,167,500

5. *Receipts of Breadstuffs in New York in each of the last seven years:*

	Flour. bbls.	Wheat. bush.	Corn. bush.	Rye. bush.	Barley. bush.	Oats. bush.
1875	3,940,272	34,214,736	22,485,707	301,654	4,707,346	10,636,077
1874	4,017,207	41,817,215	29,329,000	592,114	2,776,025	10,792,919
1873	3,546,68	33,359,870	24,589,345	992,447	2,448,326	11,235,420
1872	3,030,771	16,229,418	25,292,156	491,563	5,117,351	12,486,318
1871	3,649,045	26,518,360	27,108,156	1,055,621	3,869,123	12,516,966
1870	4,143,993	24,083,742	9,143,473	550,169	5,020,718	9,636,606
1869	3,385,716	23,813,032	11,666,784	357,803	3,007,938	8,747,322

6. *Exports from New York, Jan. 1 to Dec. 31.*

	Flour.	Wheat.	Corn.	Rye.	Barley.	Oats.
1875	1,934,180	26,92,608	12,938,740	206,898	1,505	138,752
1874	2,177,908	31,791,249	19,000,935	641,661	3,560	122,528
1873	1,655,331	27,891,829	15,587,527	1,009,148	19,376	49,710
1872	1,179,050	13,141,956	27,874,000	668,547	22,676	31,480
1871	1,639,755	21,968,643	13,045,570	525,772	98,745	47,910
1870	1,950,234	18,446,085	487,792	92,431	——	28,986
1869	1,582,311	18,240,586	1,637,586	142,542	——	49,393

7. *Comparative Stock of Flour in New York, Jan. 1:*

	1873.	1874.	1875.	1876.
Western and State Flour	322,124	244,412	261,769	433,510
Canada Flour	1,800	1,050	100	——
Southern Flour	36,700	24,289	13,320	16,200
California Flour	3,000	——	200	——
Grand total, bbls.	363,624	269,751	277,489	449,510

8. *Comparative Stock of Grain in New York, Jan. 1:*

	1873.	1874.	1875.	1876.
Wheat, bushels	1,996,984	1,258,640	4,600,711	6,371,296
Corn, bushels	6,125,803	1,272,100	1,140,108	591,690
Rye, bushels	110,854	14,630	114,899	115,607
Barley, bushels	1,211,176	194,400	561,951	513,596
Oats, bushels	1,765,999	471,600	1,283,164	1,321,587
Malt, bushels	258,402	26,730	182,775	381,471
Peas, bushels	9,292	12,470	15,139	6,650

9. *Exports from New York, Jan. 1, to Jan. 12.*

	Flour. bbls.	Wheat. bush.	Corn. bush.	Rye. bush.	Barley. bush.	Oats. bush.	Peas. bush.
1876.	71,713	521,538	433,833	2,810	——	6,133	32,093
1875.	67,403	732,422	480,372	——	——	4,719	5,095

CURRENT WHOLESALE PRICES.

	Dec. 13.	Jan. 13.
PRICE OF GOLD	114 3-8	112 7-8
FLOUR—Super to Extra State	$4 40 @ 5 85	$4 20 @ 5 85
Super to Extra Southern	4 40 @ 8 50	4 20 @ 8 50
Extra Western	4 85 @8 50	4 85 @ 9 50
Extra Genesee	5 85 @ 7 00	5 75 @ 6 75
Superfine Western	4 40 @ 4 75	4 20 @ 4 65
RYE FLOUR	4 10 @ 5 35	4 10 @ 5 40
CORN-MEAL	3 15 @ 4 00	3 00 @ 3 75
BUCKWHEAT FLOUR, ₱ 100 lbs	2 15 @ 2 65	1 90 @ 2 30
WHEAT—All kinds of White	1 30 @ 1 50	1 30 @ 1 52½
All kinds of Red and Amber	95 @ 1 40	95 @ 1 45
CORN—Yellow	68 @ 75	68 @ 73
Mixed	67 @ 75	65 @ 73
White	67 @ 76	64 @ 73
OATS—Western	43 @ 53	44 @ 52
State	45 @ 53	45 @ 52½
RYE	85 @ 95	88 @ 97
BARLEY	85 @ 1 35	80 @ 1 35
BUCKWHEAT, ₱ bush	65 @ 67	58 @ 60
HAY—Bale, ₱ 100 lbs	70 @ 1 15	75 @ 1 12½
STRAW, ₱ 100 lbs	55 @ 1 10	60 @ 1 20
COTTON—Middlings, ₱ lb	13 @ 13¼	13¼@ 13⅜
HOPS—Crop of 1875, ₱ lb	10 @ 15	10 @ 15
FEATHERS—Live Geese, ₱ lb	35 @ 55	35 @ 58
SEED—Clover, ₱ lb	12½@ 13	13 @ 13½
Timothy, ₱ bushel	2 30 @ 2 80	2 40 @ 3 00
Flax, ₱ bushel	1 65 @ 1 70	1 65 @ 1 70
SUGAR—Refi'g & Grocery ₱ lb	6¾@ 9¼	6¾@ 9⅜
MOLASSES, Cuba, ₱ gal	28 @ 38	25 @ 38
New Orleans, new crop, ₱ gal	54 @ 64	45 @ 62
COFFEE—Rio (Gold)	18 @ 20½	16¼@ 19
TOBACCO, Kentucky, &c., ₱ lb	6 @ 25	6 @ 25
Seed Leaf, ₱ lb	6 @ 25	6 @ 25
WOOL—Domestic Fleece, ₱ lb	28 @ 62	28 @ 60
Domestic, pulled, ₱ lb	27 @ 50	26 @ 50
California, clip	14 @ 33	14 @ 33
TALLOW, ₱ lb	9¾@ 10	9 @ 9⅜
OIL-CAKE—₱ ton	42 50 @46 50	41 50 @45 50
PORK—Mess, ₱ barrel	21 75 @ —	20 75 @21 00
Prime Mess, ₱ barrel	19 50 @22 00	19 00 @19 50
BEEF—Plain mess	10 50 @11 50	10 00 @11 50
LARD, in trcs. & barrels, ₱ lb	12½@ 13	12½@ 13¼
BUTTER—State, ₱ lb	24 @ 36	20 @ 35
Western, ₱ lb	14 @ 34	14 @ 33
CHEESE	4 @ 13¼	4 @ 13¼
BEANS—₱ bushel	1 30 @ 2 25	50 @ 1 95
PEAS—Canada, free, ₱ bu	1 18 @ 1 22	1 20 @ 1 25
EGGS—Fresh, ₱ dozen	28 @ 32	27 @ 32
POULTRY—Fowls	9 @ 18	7 @ 19
Turkeys—₱ lb	10 @ 18	12 @ 19
Geese, ₱ pair	1 25 @ 2 00	1 25 @ 2 50
Geese, ₱ lb	8 @ 13	6 @ 14
Ducks, ₱ pair	55 @ 80	55 @ 1 25
Ducks, ₱ lb	8 @ 16	9 @ 18
GROUSE, ₱ pair	80 @ 1 25	40 @ 90
PARTRIDGE, ₱ pair	50 @ 1 00	40 @ 70
DUCKS, Wild, ₱ pair	30 @ 1 25	30 @ 1 50
QUAIL, trapped, ₱ dozen	1 40 @ 2 50	75 @ 2 25
HARES, ₱ pair	60 @ 75	20 @ 30
RABBITS, ₱ pair	40 @ 50	20 @ 30
VENISON, ₱ lb	11¾@ 18	7 @ 16
TURNIPS ₱ bbl	50 @ 75	75 @ 1 00
CABBAGES—₱ 100	2 00 @ 5 00	3 00 @ 7 00
ONIONS—₱ bbl	1 00 @ 2 50	1 25 @ 3 25
POTATOES—₱ bbl	65 @ 1 75	75 @ 1 75
SWEET POTATOES—₱ bbl	1 25 @ 2 25	1 00 @ 2 75
BROOM-CORN	— @ —	4 @ 11
PEARS, per box	3 50 @ 4 00	4 00 @ 6 00
GRAPES, ₱ lb	3 @ 7	3 @ 8
APPLES—₱ barrel	1 75 @ 3 00	1 75 @ 3 25
CRANBERRIES—₱ bbl	7 50 @ 9 75	7 60 @10 25
SQUASH, ₱ bbl	— @ —	50 @ 1 25
CAULIFLOWER, per bbl	2 00 @ 6 00	1 50 @10 00

Gold has been up to 114¾, and down to 112⅜, closing Jan. 13th at 112⅞, as against 114⅝ on Dec. 12th..... A more active market has been reported for the leading kinds of domestic Produce. Breadstuffs have been in good request, especially toward the close, under a free export call, chiefly for Flour, Spring Wheat, and Corn, with values winding up more favorable to sellers. An unusually liberal proportion of the Flour solely for export has been recently of City Mill product, mainly for the West Indies and South America. Barley closed heavy, and Malt difficult to market. The mild weather has been decidedly against dealings in Buckwheat, either Grain or Flour, and prices have been much depressed....The New York Inspection and Grading of Grain is now in operation.....Provisions and Cotton have been in fair demand, but variable as to values....Wool has been quiet but steady. Manufacturers have been purchasing with reserve....Hops have been quite active, with the demand largely from export buyers, closing firm for the better grades, which have been in most request ...Clover Seed has been sought after for export, and quoted higher; State in most favor with buyers. Other grass Seeds dull ... Hay and Straw strong in price, but at the close less active.

New York Live-Stock Markets.

RECEIPTS.

WEEK ENDING	Beeves.	Cows.	Calves.	Sheep.	Swine.	Tot'l.
Dec. 20	8,122	76	795	24,334	25,922	59,252
Dec. 27	6,013	59	785	17,254	23,638	47,748
Jan. 3	5,958	28	704	14,988	19,483	36,611
Jan. 10	7,393	103	905	19,816	21,430	49,667
Total for 4 Weeks	27,485	269	3,189	76,342	85,973	193,258
do. *for prev. 4 Weeks*	35,205	372	4,458	94,841	129,469	264,345

	Beeves.	Cows.	Calves.	Sheep.	Swine.
Average per Week	6,871	67	797	19,085	21,493
do. do. *last Month*	8,891	93	1,114	23,710	32,367
do. do. *prev's Month*	9,810	104	2,247	20,870	31,183
Total receipts for 1875	453,060	5,631	117,580	1,228,530	1,388,541
Average for 1875	8,713	97	2,261	23,626	26,703
Total receipts for 1874	454,033	3,676	104,719	1,165,333	1,774,223
Average for 1874	8,731	71	2,014	22,411	34,120

Of the receipts for the past year, 167,703 cattle, or an average of 3,569 per week, were received at the new yards at 60th street, which were opened in February last. For the last two months of the year, the average weekly number of sheep received at these yards was 6,077. At the 48th street yards 443,781 sheep were received during the year, an average of 8,534 weekly. At the 40th street yards 701,857 hogs were received in the year, an average of 13,497 weekly. The receipts of beeves at Chicago for 1875 were 920,843 head, against 843,966 head for 1874. The total value of receipts amounted to $48,488,738; the average value being $4.28 per 100 lbs., against $4.58 in 1874. The average price for beeves in this market during the past year, was 11 cts. per lb. dressed weight, the closing price was 10 cts.

A noteworthy feature of the past year's business has been the shipment of live cattle and beef to England. About 400 head of prime beeves have been shipped alive successfully, and sold in the English markets profitably. These cattle were mostly sent by Mr. Gillett, of Elkhart, Ill., a well known breeder and feeder. Seventy head have already been shipped the present year. This new outlet, if kept open, can not fail to affect our home market to some extent for the best class of cattle, which are the only kind sent. The dressed beef shipped, in refrigerators, is said to arrive in good order, and has been received with favor in the London market, selling at 12½ cts. per lb. With the experience before us of the failure of the attempt to ship fresh beef from Texas and Colorado to New York in refrigerator cars, it is hardly wise to build up expectations of affecting this market by shipments to England in steamships. The price at which this beef sold in England can hardly be profitable.

Beeves.—The market has been very unsatisfactory throughout the month. Mild weather, and an overflow of poultry and of dressed meat, large quantities of which have sold for 3 cents per lb., have depressed the market. The failure of several large operators has increased the bad feeling, and prices have marked lower than at any period since 1860. As we close our report, an improvement is perceptible. The weather has become cold and seasonable, the poultry and dressed meat have been worked off, and the market is at least ½c. per lb. better, than a week ago. The closing sales were mostly of 6½ cwt. to 7½ cwt. native steers, which sold freely at 10¼@ 11¼c. per lb., on 56 to 57 lbs. per gross cwt. Prime cattle sold for 13 @ 13½c. per lb., on estimated weight of 58 lbs. per gross cwt. No Texans were on sale, and very few extra beeves.

The prices for the past four weeks were as follows:

WEEK ENDING	Range.	Large Sales.	Aver.
Dec. 20	7 @11½c.	9 @11 c.	10½c.
Dec. 27	8¼@11 c.	6½@13½c.	10 c.
Jan. 3	9 @11¼c.	7½@13½c.	10¼c.
Jan. 10	8 @13½c.	10 @12 c.	10¾c.

Milch Cows.—The market for fresh cows has been dull, and without demand. Prices are somewhat lower; good fresh cows selling at $65 @ $75 per head; extra at $80, and ordinary at $55 @ $60....**Calves.**—Hog-dressed calves are coming in freely, and the market, steady through the month, closes higher. Fat milk veals are selling at 11c. ₱ lb., dressed weight, for the best, and 10½ for prime; hog-dressed bring 6c. @ 8c. per lb., and grass calves $10 per head, for 200 to 250 lb. calves, up to $12 @ $22 for yearlings....**Sheep.**—The market has been dull and heavy, with larger arrivals than could be sold easily. Poor ewes sold at the close at 4¾c. ₱ lb., alive, fair to good sheep at 6 @ 6½c., and the best at 7c. ₱ lb. Pelts are selling at $1.70 each ....**Swine.**—The market for hogs has steadily advanced, with an active business and light receipts. For dressed pigs 11c. ₱ lb. has been obtained, 160 to 180 lb. dressed hogs, sold for 10 @ 10¼c. ₱ lb., and heavy at 9¼ @ 9⅞c. ₱ lb. Western dressed are quoted at 9 @ 9¼c. ₱ lb. The Chicago Live Stock Reporter gives the following particulars of the pork trade for the past year: "Receipts of hogs in Chicago, 1875, 3,912,110, against 4,258,379 in 1874; shipments for the corresponding years, 1,582,643, averaging 233¾ lb., against 2,330,361, averaging 218 lb. The value of live hogs received in Chicago in 1875, is given at $67,226,963. The number packed and taken by butchers in that city for October, November, and December, is 980,077, against 1,041,219 same time last year. Total packing last season, 1,690,348. Packing to date this year, as returned by the Chicago Pork Packers' Association: Chicago, 838,339; Cincinnati, 358,959; St. Louis, 183,833; Indianapolis, 217,018; St. Joseph, 45,000. This is about 325,000 less than were packed at the above places during the same time last year."

Prices of Feed.

Bran, per ton	$18.00@$20.00
Middlings, per ton	22.00@ 24.00
Ground Feed, per ton	22.00@ 24.00
Linseed-oil-cake, western, per ton	45.00@ 46.00
Cotton-seed-cake, per ton	35.50@ 40.00
Chandler's Scraps, per lb	3@ 4

Prices of Fertilizers.

Superphosphate of Lime, per ton	$25.00@$26.50
" Ammoniated, per ton	45.00@ 50.00
Pure Ground Bone, per ton	33.00@ 40.00
Bone Meal, per ton	40.00@ 45.00
Raw Bones Unground, per ton	25.00
Bone Black, per ton	27.50@ 30.00
Pure Raw Bone Phosphate, per ton	38.00@ 45.00
Dried Blood, (11@12 per cent ammonia), per ton	40.00@ 45.00
Fish Guano, per ton	20.00@ 25.00
South Carolina Phosphate, (fine ground), per ton	19.00@ 21.00
Niter Cake, (ground), per ton	25.00
Sulphate Soda, ground per ton	25.00
German Potash Salts, (30@35 per cent), per ton	20.00@ 22.00
Peruvian Guano, per ton	58.00@ 61.00
Gypsum, Nova Scotia, ground, per ton	9.50
" In barrels, per bbl	1.25
Sulphate of Ammonia, per lb	4¾c.@ 5 c.
Chloride of Potassium, (muriate of potash), lb	2½c.@ 3 c.
Nitrate of Potash, crude, per lb	8½c.
Nitrate of Soda, per lb	3¾c.@ 4 c.
Sulphate of Potash, per lb	1¼c.
Leached Wood-ashes, Can. and N. Y., per bush.	17 c.@19 c.

The trade in fertilizers has been quite brisk the past month, many orders having arrived from England and the southern states. Fish scrap has moved in large quantities, but at a low price; 4,000 tons have been taken at the factories in bulk, at $12 ₱ ton, and in barrels in New York, at $21 per ton. It is expected this foreign trade will increase, as the scrap is favorably received in England. Small lots of nitrate of soda have been sold at 3¾c. @ 3⅞c. ₱ lb., and chloride of potassium at 2⅜c.

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On Page 73, and send to the Publishers for an Illustrated List of Premiums if you have not already received it.

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Speak a Word for the German American Agriculturist.—For 17 years past an edition of this journal has been issued in the German language for the benefit of the large number of our citizens who read only the language of Vaterland. It contains the engravings and all the principal reading of the English edition. Several pages devoted to the advertisements in the English edition, are in the German edition occupied by a special extra Department, edited by the Hon. Frederick Münch, a distinguished cultivator of Missouri, which gives it additional value to the German reader. The colored cover only is omitted from the German edition. Many of our subscribers take the German copy for their gardener or their workmen. Will our friends make this edition known to their German friends and neighbors? Having the advantage of the engravings of the English edition, it is larger, better, and cheaper, than it could be if published independently. Both editions are issued on the same terms, and clubs may consist of either edition, or a part of both.

A Fair This Month.—The Southern States' Agricultural and Industrial Exposition, will open at New Orleans, La., on the 26th inst., (Feb.), and continue for 10 days. The premium list is very large, and provides for a wide range of exhibits. The grounds of the Association are said to be of great interest for the variety of tropical and sub-tropical plants growing there, and new and large halls are erecting. Samuel Mullen, 80 Camp St., New Orleans, is Gen'l. Superintendent.

A Dollar on Interest will yield 6 to 10 cents a year. A book in one's house, treating on his business, whether it be farming, gardening, or any mechanical pursuit, will furnish new ideas, awaken new thoughts, develop mental power, and in ninety-nine cases out of every hundred, lead to improved methods of culture or work, that will save or bring back many times the cost of the book. Still more important is it where there are growing sons. Let them see that their calling is of importance enough to have books written upon it, and they will respect it more; they will read, and that will cause them to think; and thinking is what not only raises men above the brutes, but raises one man above another. How many parents see their children reading fiction, exciting and demoralizing story books, etc., and make no effort to make them intelligent in the direction of their daily work. Five, ten, or fifteen dollars put into books of this kind, will pay ten-fold, a hundred-fold the interest that can be realized in any other investment. Think of this. Our advertising pages abound in announcements of books that should be in every farmer's house.

Artificial Fertilizers—Important Action.—On Jan. 13th, at the "*Conn. Agricultural Experiment Station,*" Middletown, Conn., there was a gathering of some sixty of the most intelligent leading farmers of the state, together with twenty dealers and representatives of manufacturers of artificial fertilizers, from Baltimore, New York, Boston, and various other points. The entire day was very profitably occupied in discussion and conversation. We have only space to give the final result. It was agreed that hereafter, the farmers of Connecticut will buy fertilizers only of those dealers and manufacturers who will subject their articles to the analysis and control of the *Station*, and sell upon a guaranteed composition of a uniform character and value. The articles sold will be subject to frequent analyses at the *Station*, so that any deviation from the "*guarantees*" will be quickly detected. This action was fully agreed to by the dealers. This movement will be worth thousands of dollars to that state alone. Spurious and poor fertilizers will have to find a market elsewhere, and as farmers will hereafter be reasonably certain of getting what they intend to buy, they will use these helps to production more freely, and an increased production will be the result. Some other states will very soon feel the necessity of establishing *Experiment Stations*, and of adopting a course similar to that now fully inaugurated in Connecticut.

Exit—The Horticulturist.—"The Horticulturist" was founded by the late A.J. Downing, in 1846, and was carried on by him until his lamented death in 1852. During these years he gave to its pages some of his best efforts, and drew to them a host of excellent contributions. Whoever possesses a series of the earlier volumes, has much that is precious in our horticultural literature. After Downing, the Horticulturist was sometimes in able editorial hands, like those of Barry, but a great portion of the time it has seemed to exist without any editorial supervision. While it had some excellent contributors, it had no competent head, and now that it has disappeared, will not be missed other than by its few remaining early readers, who had an affection for it because it was A. J. Downing's. It is announced that the Horticulturist is united with the Gardeners' Monthly, and that Journal bears the title "Gardeners' Monthly and Horticulturist." We are glad to see that the "Monthly" shows no signs of dilution from the addition of so much weakness; it can gain very little by the change, while the former subscribers to the Horticulturist will find it greatly to their benefit. The horticulturists of the country should support—and liberally, their one journal, and enable the publisher to make its mechanical part better than it ever yet has been. Its editorial management could not be in better hands than those of Thomas Meehan.

The Death of Doct. E. S. Hull.—Those who attended the meeting of the Am. Pomological Society at Chicago, and saw the effective work done by Doct. Hull, on the part of the Illinois Horticultural Society, were greatly shocked to learn, a few weeks after their return home, that the Doctor died at his residence, near Alton, Ill, the last week in November, probably from the results of over-exertion and exposure at Chicago. An earlier and more extended notice of his death was crowded out at the time, and we can now but briefly say that not only western horticulture, but American horticulture, loses one of its most ardent workers and useful advocates. So great was the shock of his sudden death to his wife, that she survived him only four days.

How all the Children are remembered by Mr. CRANDALL for the CENTENNIAL YEAR, is partially indicated on the third cover page of this paper. Though half a century has passed since we were old enough to enjoy toys, we confess to have been quite a boy again over Mr. Crandall's **"Ye HERO of '76,"** in changing the "Old Soldier" into some of the hundreds of "positions" that he can be made to assume so naturally. One of the most interesting features of this new toy, is to observe how great a change in expression is given by a slight change in the position of a hand, foot, arm, cap, etc. The charming toy will teach children not a little in the study of the human form, and in assuming expressive attitudes and postures, as well as in drawing human figures to characterize various emotions. While a single "Hero" will answer for all this, two or three or more used together, to represent a company of persons in different positions at the same time, will add largely to the effect produced. Taken all in all, this is the finest thing for the amusement of children, that we have ever seen, and a multitude of "grown-up children" will spend many an hour over it.

Sundry Humbugs.

When good, well-meaning persons, who lead quiet and exemplary lives, and who think that they are unknown beyond the immediate circle of their own neighborhood, receive from some far distant city, circulars either asking their co-operation in some swindling scheme, or proposing to cure troubles which they scarcely know by name, they are astonished beyond measure. Their first thought is, "how did these rascals get hold of my name?"—We have before stated that

LISTS OF NAMES & ADDRESSES

were regular articles of merchandize, and it is not uncommon to find them advertised in the city papers. It must be known that nearly all the humbugging schemes are carried on through the mails; these fellows operate at a distance, and very rarely advertise or issue circulars in the immediate vicinity of the place they hail from. In a majority of cases an attempt to find the person who sends out flaming circulars, takes one to the top story of some obscure building, where he finds a locked door with a hole in it through which to drop letters. Operating so generally by correspondence, it will be seen that lists of persons in all parts of the country, to whom circulars may be sent, are a most important part of the outfit of these operators, and in many cases the most expensive one. In former articles we have shown several of the methods by which these lists are procured. One very easy method has been tried so often that it now no longer works so well as formerly. This is to send to the secretaries or other officers of such organizations as Sons of Temperance, Odd Fellows, and similar bodies, a circular stating that the subscriber is about to publish a book of great interest to the order, and if the officer addressed will send a list of the members of his society, he will receive a copy free in return for his trouble. We have before us a letter from a Rhode Island correspondent, who has received a circular from a "Brokerage Co." in St. Louis, asking for a list of all persons in his town worth over $2,000. As our friend did not respond, another circular followed the first. Let all who receive applications of any kind from strangers, for names, refuse to give them. ....So sharp a look-out is kept for names, that we know persons who will not allow their names to go into the directory, as they wish to avoid the annoyance from circulars that is felt by most persons who live in cities.... Many a person who is surprised that his own name is known, would be still more surprised to learn that he has helped in making such lists. Some solicitor or book agent calls upon him, and as he is leaving, the stranger asks the name of the person who lives in the next house on the road, our friend gives his neighbor's name, not thinking that his own name has been obtained in a similar manner a few minutes before, and that the list of the whole neighborhood will be thus filled up....Complaints continue to come of certain

BUSINESS COLLEGES AND TELEGRAPH SCHOOLS,

Charges are made that farmers' boys and girls induced to go there by the promise that situations will be procured for them, are cheated out of their money, and get neither valuable instruction nor situations. We have from time to time been solicited to "show them up." We are often obliged to repeat that we do not show people up on general accusations like these. Let those who have been defrauded by these schools send us a substantiated statement of the facts... Texas, Kansas, and Wyoming have the unenviable notoriety of being among the few states and territories which countenance

LOTTERY GAMBLING,

and some of these schemes claim to be, and we are afraid are, authorized by the Legislature. Let us hope that this Centennial year will see the end of this legalized gambling, and let lotteries stand, where they belong, with faro, roulette, and other games of chance. There is one concern in Texas, the "Mutual Benefit Association," which is simply a swindle. It is located at Kaufman, and its "secretary," Choate Somerby, continues to send out circulars informing persons that one of the tickets sent to them has drawn a valuable prize, and asks that the price of the tickets, $2, be remitted in order that the "valuable gift" may be sent. It is possi-

ble that so stale a bait as this may catch some poor flat-fish....Here is the Wyoming Lottery at Laramie, resorts to a remarkable trick. It has a *special drawing* for agents. Only 5,000 tickets, each one to draw a prize given free to agents. This they do as a form of advertising, so that each agent can say that he drew a prize and thus "create more interest, and cause those agents to sell more tickets in our next Extraordinary Drawing, than $50,000 spent in advertising." In this private and peculiar lottery, $31,546 are offered in prizes from 50c. up to $5,000. This is about the smartest advertising dodge we have known of. Had it been proposed at the east, it would have been "a cute Yankee trick," but in Wyoming it is done, as the head of the circular has it, "By authority of an Act of the Legislature." No doubt the managers have a right to make a lottery all prizes, but this getting up a special drawing for agents, so that their exceptional "luck" will cause them to sell more tickets in other lotteries, which have 8 blanks to one prize looks like—like—Mr. Governor, of Wyoming, who presided at one of these drawings—Mr. Mayor, of Laramie, who was on the stage—Mr. Judge, who, (of all remarkable things), administered an oath to the drawers. What *does* this proceeding look most like?....No, we thank you, Mr. Topeka man,

"NOT ANY IN OURS,"

You come to the wrong shop with your contract. He sends us a contract to fill up by which we are to agree to print his advertisement and give him notices in each issue "of not less than ten or over twenty lines," for so much money, and so much in tickets. We should just like to know if there are any papers in the country who take lottery tickets in pay for advertising....Last month we referred to the great number of nonsensical and worse than worthless books that were offered, and we might have added that the dealers in these also offered a lot of equally

WORTHLESS AND TRASHY ARTICLES.

Boston, New York, and Newark, N. J., appear to be the headquarters of these wares, if they are not all one concern, for their circulars read wonderfully alike. Among the things offered are $3.50 sewing machines; the Brazilian Perfume Stone—that thing you know that comes from "a secluded ravine in the Andes." Stuff to render kerosene non-explosive, and prevent chimneys from breaking; Photographs that show "your future wife or husband;" a preparation for the "Development of the Breast;" that "Butter Compound" again, and various other old, exploded, and worn-out humbugs offered to "Agents." One concern has on its circular of a trashy book, a slip saying: If you send this slip back with 25 cents in a letter, we will send you something that will bring you in, honorably, over two hundred dollars a month, and not occupy more than half your time. Suitable for both sexes." These spurious promises must catch a great many unsuspecting persons; if we may judge from the number of these circulars sent us by persons who ask our opinion of them, there must be many more not so cautious who bite at once at the bait. Our readers may be very sure that if a business circular is of such a doubtful character that they are obliged to ask others about it, it is a very good business to let alone. ....Circulars of attractive mining schemes are industriously circulated, and with a certain class there is nothing so fascinating as the idea of getting rich by

GOLD AND SILVER MINING.

There is just that element of uncertainty about it which makes it attractive to those who believe in "luck," and even at this late day, when mining is in most localities reduced to a question of day's work, there are those who believe that fortune has something in store for them. If those who are old enough to recollect the California fever of about 1849, when an individual really stood some chance to "make his pile," will recall those who went to California and came back, or remained there, really bettered in condition through their mining operations, they will find that the proportion of successful ones even then was very small, compared with those who failed. Colorado is now the attractive mining region, and we cannot better reply to those who ask us about going there than by giving the following from a letter of a correspondent in the mining regions. He writes: "Reading your humbug articles reminds me, as I see thousands of "states' people" rushing to our mines, that some one conversant with mines and mining should give the public a little advice regarding them. There is no greater humbug in existence than our mines, and none in regard to which the operators are more persistent in misleading and deceiving. We have living within twenty miles of us at least one hundred old miners, who have mined in California and various territories, not one of whom, to my knowledge, has visited the famous mines near here. They say there is no doubt that very rich mines exist here, but it's only one of many who will strike a "good thing," and he, for the want of capital and machinery, will be forced to sell to the capitalists when he has partially developed his claim. The capitalist understands this, and practices what is known as the 'freeze out' game, and after one or two years gathers in all the desirable claims at very low figures. Our old miners say they would as soon take their chance in a lottery at once, and thus escape all the work and hardships; and they say that, though a few lucky ones make their pile, thousands work for their board, many not even making that. Taking all the mining here as a whole, there is more invested in labor and capital than the mines ever repay. When a person is lucky, though, it is harped upon for years; stock jobbers and newspaper men never lose an opportunity of mentioning the case as an inducement for others to try. Our papers are perfectly reckless, their only aim being to draw immigration here, well knowing that if a man is once here, they have him for life, for by the time he gets his eyes open he is too poor to get away. Why eastern men of moderate means who can make a living where they are, will come here upon an uncertainty I cannot see, and if the *American Agriculturist* can be the means of keeping a few of the many at home, it will be doing them a good service."

MEDICAL MATTERS

do not open very brilliantly with the new year. It is hardly possible that these ingenious gentlemen—oh yes! and ladies too, for we must not forget dear Mother Noble and Ma'am Legget—will let the opportunity pass and not have a grand Centennial cure-all of some kind. Just now it is very dull, but perhaps it is only the lull that precedes the tempest. Still we have a few interesting cases under consideration, and it is not at all likely that medical quacks will in future numbers escape the exposure they merit....Several inquiries about Wall-street stock-brokers are referred to last month's humbugs.

Prize Potato Crops.—Last spring Messrs. B. K. Bliss & Sons offered premiums for the largest yields from one pound each of Snowflake and Eureka, two of their new varieties of potatoes. The awards have been made, and a full report of the committee will soon be published. The returns are simply astonishing, but they are thoroughly substantiated by evidence and affidavits. Such large yields were of course obtained by every legitimate aid; the eyes of the potatoes, greatly subdivided, and soil already very rich, pushed to its utmost with fertilizers. The report gives many interesting particulars; here we can only give the yields and the awards. Largest yield of *Snowflake* from one pound of seed—1st prize to P. C. Wood, Esther, Ill., 1,417 lbs., $100; 2nd prize to J. L. Perkins, Little Sioux, Iowa, 1,304 lbs., $50; 3rd prize to F. H. Seller, Verona, Essex Co., N. J., 1,125 lbs., $40; 4th prize to J. I. Salter, St. Cloud, Minn., 1,090¼ lbs., $30; 5th prize to Alfred Rose, Penn Yan, N. Y., 1,089¼ lbs., $20; 6th prize to Henry V. Rose, Penn Yan, N. Y., 1,069½ lbs., $10. Largest yield of *Eureka* from one pound of seed—1st prize to J. L. Perkins, Little Sioux, Iowa, 1,666½ lbs., $100; 2nd prize to P. C. Wood, Esther, Ill., 1,403 lbs., $50; 3rd prize to Alfred Rose, Penn Yan, N. Y., 1,149 lbs., $40; 4th prize to Milton M. Rose, Penn Yan, N. Y., 1,145 lbs., $30; 5th prize to J. I. Salter, St. Cloud, Minn., 1,087 lbs., $20; 6th prize to Henry V. Rose, Penn Yan, N. Y., 1,066½ lbs. $10.

The Illustrated Annual Register of Rural Affairs, by J. J. Thomas; Albany, Luther Tucker & Sons. These little volumes come but once a year, but that is quite too often for us to find some new form in which to express our commendation of them. We can only say that this is as good as the others, and that they are all good, useful, and of real value, and well worth the 30 cents for which they may be had of the Orange Judd Co.

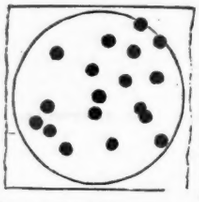
The Methodist, which was advertised in the January number, is now under the editorial management of the new editor, Dr. Wheeler. The Methodist takes high rank among religious journals. It is spicy, intelligent, and liberal.

One Bad Result of Hard Times—"Religious Journals."—Among some good effects produced by the hard times, such as economy, thrift, etc., we have to deplore the course taken by sundry "religious journals" to eke out a subsistence, or existence, and by some, in fair circumstances, to keep up an income. We refer to the recent larger admission of advertisements of quack medicines and quack doctors. Before us is a religious newspaper, considered high-toned, edited by a college professor, and a paper of considerable influence. Yet in this one number are a score of advertisements of an objectionable character; of such a character that they could not get admission into the *American Agriculturist* on any terms. The advertisements are inserted because it pays the advertisers to do so. Yet every dollar they receive from customers is for that which is either of no benefit, or positively injurious, usually the latter. Now the plain question is, are not the editors or publishers of papers advertising such things *participes criminorum*—aiders in the fraud? Their only defense can be that they don't care for the well being of their readers, or that they do not know that such advertisements are injurious. If they take the latter ground, it may be well queried whether they have the requisite qualifications to occupy the position of conservitors and promoters of the public welfare. N. B. The journal above referred to is not the New York Independent, which justifies itself in advertising "patent medicines, etc.," but another journal, one of a considerable class. If the reader will turn to *his* religious paper, and find it free from this species of advertisements, then *that* is not the paper we mean.

Allen's Patent Seed Drills and Wheel Hoes.—These implements have been in the market for several years, and have been used with satisfaction by many experienced gardeners, both for sowing seeds, and for cultivating the crops after they were up. From the experience of last season, we were induced to place this implement upon our premium list, which is as positive a recommendation, as can be given, as nothing but articles of real merit are offered there. In our gardening directions we often say, "not a weed should be seen;" the cultivator part of this implement renders it easy to carry out this injunction, as it may be used among the crops with most "killing effect" on the weeds.

The New Excelsior Lawn Mower is the name given to the latest production of Chadborn, Colwell & Co. It may be that they will produce a mower that will do the work better, with less expenditure of strength, than is required by this, but until they do, we shall have to regard this as, taken altogether, the most satisfactory among the many good lawn mowers.

Our Premium Target Rifle.—Among the numerous valuable Premiums offered for clubs of subscribers to the *American Agriculturist* for **1876,** is one (No. 61) of a *Target Rifle*, designed for hunting as well as target shooting. The other day Mr. JUDD took one of these out to his country residence to *test* it. After firing half a dozen times to get the new bead-sight adjusted in the manner described last month (page 5), he made the 18 successive shots marked on the annexed sketch, which is an exact copy of the 6-inch "*bull's-eye*" of the target, reduced to one-sixth. It will be seen that no ball hit over 2⅝ inches from the central point. This was at a distance of 200 measured yards, (nearly 40 rods!) To give the gun a fair show, the firing was from a rest—on the end of a plank. The firing was stopped by darkness coming on. Mr. J. says he knows no reason why a hundred or more successive bull's-eyes might not have been made equally well, as "*the gun carried just where he held it, every time.*"—When we compare the work of these guns with that of those in use only a few years since, they are certainly worth securing. [The Publishers will be happy to present *just such a rifle* to each person, who will collect a club of 68 subscribers at the regular rates, $1.60 each, postage included. It can be easily done during this leisure month. (For any further particulars see the Illustrated Premium List, which will be supplied free to any one not having it already.) See also page 73.]



"Answer in Your Next Paper," says an Ohio correspondent at the bottom of his letter. He describes his place, and asks advice as to its adaptability to poultry raising and other questions, of interest to no other living mortal, and then says: "Ans. in your next paper in Dec." But he is very careful to avoid giving *his name*. Please notice, EVERYBODY. We can not fill the paper with merely personal matters. We do not reply in the paper to anonymous letters, and we of course can't reply by mail.

Baldwin's American Fodder Cutter.—The makers of this cutter claim that it is "The best in the world." We can not say how just this claim may be, never having tried all the machines "in the world," but of the considerable number we have used, we regard this as by far the best. We have used this for some months, and for ease of working, and rapidity of cutting, it is eminently satisfactory. It is not always a fair test of a machine that hired men like it, but they take to this at once, and look upon the cutting of feed with this rather as play than as work.

Importation of Clydesdale Mares.—Mr. William Crozier, of Northport, L. I., has added to his stock a pair of Clydesdale mares, imported from Scotland by Mr. Simon Beattie, of Toronto, Canada. These mares are four and five years old, dark bay in color, 16

hands high, and weigh about 1,700 pounds each. They have taken four first prizes and one second prize at the Provincial and other fairs in Canada, and are in foal to a Clyde stallion, that was imported by Mr. Beattie at a cost of $4,500. Mr. Crozier has also added to his stock a young Clyde stallion, 2 years old, which now weighs 1,400 lbs., and an imported Ayrshire cow, "Rosie," the first premium cow at the Exhibition of the Highland Agricultural Society, Scotland,

Basket Items continued on page 73.

The American Dairymen's Association.

The eleventh Annual Convention of this Association met at Rome, N. Y., on the 11th of January. Vice-President T. D. Curtis, presided. After some formal business had been transacted, Mr. L. B. Arnold read a paper reviewing the condition of dairy interests during the past year. He deprecated the manufacture of skim milk cheese, (a poor but honest manufacture), and advocated that of oleomargarine cheese as an improved product. He believed the aggregate returns of the business of dairying would be equal to those of last year, although prices had fallen off. Canadian cheese had met with an enlarged demand, and the reason was that this product was uniformly good, and no skimming was practiced in Canadian dairies. The great requisite for an improvement in American markets was greater attention to quality. Dr. Wetherell, of Boston, endorsing the last remark, urged the Association to declare its opposition to the manufacture of both skim milk and oleo-margarine cheese. Afterwards a resolution to the effect that the convention was opposed to the adulteration of butter and cheese, was introduced and unanimously agreed to. C. L. Sheldon read a paper entitled "Hints on Cheese Making," in which he referred to the difficulty of curing cheese successfully, and to the shrinking of milk from failure of feed at certain seasons. A discussion ensued, in which the threadbare question of the value of fodder corn was the chief subject; the result was a wide difference of opinion, which showed how useless is the discussion of questions in which a variety of conditions is involved, and every speaker views the subject in a different light. Dr. Wetherell read a paper on "Dairy Stock," in which he enforced the necessity of breeding a higher class of dairy cows, which should produce the largest mess of milk from a standard quantity of feed. Various other papers were read upon such matters as "deep and shallow setting of milk," (another seemingly endless provocative of useless discussion, and of conflicting statements), "butter making," "scalding milk for butter and cheese," and "making butter in factories," all of which were followed by prolonged discussions. Prof. E. W. Stewart, of Buffalo, advocated the establishment of a dairy Experimental Station, in a lengthened argument, and suggested as a means of its support, the payment of each dairyman of 3 cents per annum for each cow owned, which he stated would realize $12,000 yearly. The representative of the Onondaga Salt Company, then made his yearly speech in favor of "Onondaga Factory Filled Salt." An agent of the Centennial Exhibition afterwards presented himself, and a committee was appointed to arrange for the proper representation of dairy products at Philadelphia, and to collect funds for this purpose. The report of this committee is to be made hereafter.

Nothing of greater importance followed than the usual denunciations against filthy milk and unclean dairymen, and a surprising speech by a professor from an agricultural college, in which he enforced the "Christian duty of parents to oblige their children to eat cheese," which he declared to be the only single food upon which a young child could grow and thrive; and the impossibility of raising calves upon pure cream. Soon after this the meeting adjourned.

The New York Horticultural Association.

This new Society, the organization of which was noted last month, held its first regular monthly meeting on January 15, at room number 24, in the Cooper Institute, N. Y. There was a full attendance, and an enthusiasm which promises well for the future of the Society. In response to the request that members should exhibit any plants, flowers etc., that were new or of special interest, there was, considering the inclement season, a most gratifying display. William Bennet, Flatbush, L. I., exhibited two immense specimens of *Cypripedium insigne*, having upward of fifty blooms on each, and two specimens of another well known orchid, *Dendrobium nobile*, with upwards of seventy-five expanded flowers on each. These plants alone were worth going a long distance to see. Also from Mr. B., were four magnificent specimens of the rarer *Dracænas*, viz., *albicans*, *amabilis ferrea*, *tricolor*, and *Guilfoylei*.

S. B. Parsons & Son, Flushing, L. I., presented a collection of interesting variegated-leaved plants, mostly from Japan, among which were *Camellia Japonica*, *aureo-marginata*, *C. myrtifolia variegata*, *Osmanthus ilicifolius*, *var.*, *Ligustrum ovatum*, *var.*, and others. Archibald Veitch, of New Haven, Conn., sent a new citron-scented Geranium of great promise. Peter Henderson, Jersey City Heights, N. J., a specimen of the new English variegated-leaved Geranium, "Happy Thought," a most absurd name to be applied to a plant that will certainly become a popular one. John Greaves, Paterson, N. J., had fine specimens of *Sedum aizoideum*, *var.*, and a narrow-leaved variety of "Smilax."

Chas. Zeller, Flatbush, L. I. A grand specimen, 4 feet high, and 4 feet in diameter, of an Enpatorium-like plant, the name of which is not yet determined. It is valuable for coming in bloom just at the holiday season, when white flowers are so much wanted. Mr. Zeller also exhibited a fine new seedling monthly Carnation. George Such, of South Amboy, N. J., sent cut flowers of *Luculia gratissima*, *Cypripedium Rœzli*, and *Cereus roseus superbissimus*, one of the most beautiful of the cactus tribe.

William Blount, Jersey City Hights, N. J., showed cut flowers of a new white seedling Carnation, of great promise. There was but little display of fruit. Mr. Foster, nurseryman, of Babylon, L. I., showed well preserved specimens of Duchesse de Bourdeaux Pears, and William Chorlton, of Staten Island, a branch of Guava, in fruit. It is the intention of the Society, when well under way, to give "Certificates of Merit," such as are given by the London Horticultural Society, for all deserving novelties in horticulture. In Europe a certificate of merit from some competent society, is of far greater value to those who introduce new flowers, fruits, and vegetables, than any money premium, as the purchaser buys such plants in confidence, knowing that they have passed a critical examination. At present the purchaser of novelties in this country must depend upon the representations of the seller, which are not always unprejudiced.

Seeds—Seedsmen—and the Law.

A case was recently decided in Monmouth Co., N. J., against a seedsman who sold a farmer a quarter of a pound of turnip seed for 25 cents. The seed was sold as the Early Strap-leaved Turnip, but it proved to be the Ruta Baga, or Sweedish Turnip, a late variety. The farmer claimed that in consequence of its being a late instead of an early sort, he lost $100. That such an amount of damage could result from so small a quantity of turnip seed, was nonsense, and the seedsman should have had no difficulty in proving it to be so. However, the farmer must have discovered, long before he had expended much labor in cultivating the crop, that it was not an early variety, and he had a plenty of time to plow it down, and put in seeds for a crop that would have paid, had he been so disposed. A similar case occurred, and a suit was threatened, in which a seedsman sold by mistake for 1 oz. of Cauliflower seed, what proved to be Savoy Cabbage, though the dealer received it as Cauliflower from one of the most celebrated houses in Europe. The gardener no doubt knew, soon after the seed germinated, that it was not Cauliflower, yet he persisted in cultivating the plants, knowing that they had no more chance of producing Cauliflowers than that thistles would produce figs. He now demands that the seedsman shall pay him the market price per head for Cauliflower, for damage sustained; and should he sue, the New Jersey case will be cited as a precedent. He had in all probability time to sow again after discovering the error, but instead of so doing, he persisted in planting out the Savoy Cabbages, and at the end of the season, modestly presented his bill for what a crop of Cauliflower would have been, had he had a perfect crop. The success of a Cauliflower crop is very uncertain, even where the purity of the variety is undoubted, and this fact no doubt the gardener was sharp enough to know, but he preferred to plant the Savoy Cabbages, thinking he had a safe claim against the seedsman. No wonder the seedsmen are alarmed, for if heavy damages can be claimed in such cases, it will drive every responsible man out of the business. Any designing rascal can buy a pound of Cauliflower seed from Jones, and a pound of Savoy Cabbage seed from Smith, plant the Cabbage seed and present his bill for the market price of a perfect crop of Cauliflower to Jones, and if he objects to pay, the law comes in to the rescue of the rascal, and commands Jones to pay damages. In view of this state of things, all the seedsmen of New York and Boston, together with the leading firms of Philadelphia, have, upon legal advice, decided to print on all their seed bags, tags, billheads, etc., a disclaimer of guarantee, reading thus: "While we exercise the greatest care to have all Seeds pure and reliable, it is hereby mutually agreed between ourselves and the purchaser of this package, that we do not warrant the same, and are not in any respect liable or responsible for the Seeds sold by us, or for any loss or damage arising from any failure thereof in any respect." The seedsmen have in contemplation the formation of a Protective Union, composed of all the leading dealers, to make common cause against unfair and malicious prosecution against any one of their number.

Bee Notes for January.

BY L. C. ROOT, MOHAWK, N. Y.

With the most perfect quiet, bees will breed moderately during this month, even in cold climates. To the inexperienced it may seem desirable to induce breeding very early, in order to increase the strength of the stock. Facts have proved that quite the reverse is true. A year ago, about the last of January, I was desirous of ascertaining to what extent my bees were breeding, as I was holding the temperature in my bee-room much higher than was generally recommended. I took from the cellar one of my very best Italian colonies which stood nearest the door, and examined it, finding the usual amount of brood. I gave it no further attention, until I took the bees from the cellar in the spring, at which time this was the poorest swarm in the whole lot of 120; so poor that they swarmed out within an hour after being set out. The queen's wing being clipped, I caught her in front of the hive, and introduced her to a queenless stock, where she proved herself in no degree inferior to those in the strongest stocks, that had been left undisturbed. I mention this instance to enforce more fully the advantage of leaving bees while in winter quarters in perfect quiet. Many have felt it an absolute necessity to improve the first opportunity, during this or the following month, to set the bees on their summer stands, to give them a chance to fly, and then return them to winter quarters.

Some writers have recently advocated allowing bees to fly under glass occasionally during the winter. I have no idea that this will prove a benefit. One of the best things in regard to indoor wintering is the fact that the bees may be prevented from flying during occasional fair days. Recently we have had most positive proof that bees are taken from their winter quarters much too early, and I shall give my ideas on this point more fully in future "Notes." In many enterprises there are always those who talk largely of anticipated results, instead of realities, and many enthusiastic beekeepers have talked of possible profits until beginners have been led to expect extravagant returns not warranted by experience.

Persons interested in bees should understand one very important fact, that bee-culture is a business to be *learned*, as with any other trade or profession, and success depends in a marked degree upon knowledge and experience. I often receive letters asking me to answer "by return mail," giving my experience, with full instructions how to conduct an apiary to return the most profit.

When to Commence Keeping Bees.

Every practical beekeeper will admit that this is a question of importance. I venture to say that the *time* when most persons commence the business, is the prime reason that so many are unsuccessful. It is an established fact, that about every third year we have a poor season for bees. Those who observe the results obtained by others, will say, after a poor season, that they do not care to engage in it, while the next year, this being a good one, the results lead them to think that it may be a business worthy their attention, and this being followed by another good season, decides them. It will be seen that such persons are ready to begin just in time to meet the reverse of a poor season. Every dealer in bees will bear witness that after the best seasons their sales of stocks are invariably the greatest. This is, of course, to the interest of those furnishing bees, as it disposes of them before a poor season, and leaves the greater number on hand at a time when a better crop of honey may be expected.

How to Commence Beekeeping.

This depends much on the information the beginner possesses. To whichever of these classes he belongs, viz: those who merely make it a pastime, or the larger class who wish only honey enough for family use, or to those who desire to make it an exclusive business; the first thing necessary is to secure some standard work on beekeeping where the first principles are to be learned. To purchase bees in box hives at the current prices, and transfer them to the movable comb hive, will require some experience. Probably the best way would be to procure them of some reliable person who will furnish none but the very best swarms, for with all the aid the experienced may lend, the beginner will find enough drawbacks.

A Suggestion.—A "Question Box."

It is a custom at many beekeepers' conventions to establish a question box, where questions of most interest to the members may be collected and answered for the benefit of all. I would suggest the idea to the beekeeping readers of the *American Agriculturist*. Questions of general importance addressed to me will be answered through these columns.

A House Costing $2,500 to $3,200.

BY S. B. REED, ARCHITECT, CORONA, LONG ISLAND, N. Y.

These plans were designed for a suburban cottage, having a cheerful outside appearance, and

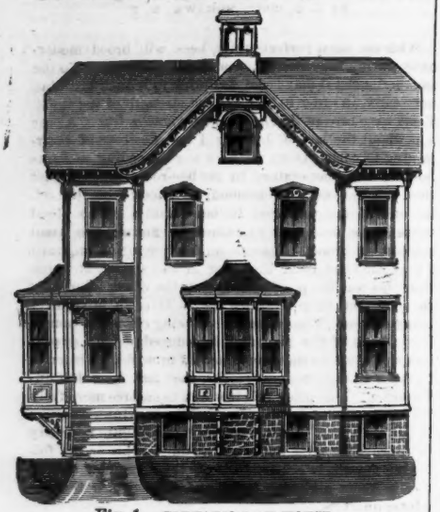


Fig. 1.—ELEVATION OF HOUSE.

containing ample interior apartments conveniently arranged, with such modern improvements as are desirable for the use of an ordinary sized family. ....**Exterior,** (fig. 1).—The general outlines are made up of simple parts, embracing features of pleasing variety and elegance. The foundation walls, showing four feet above ground, insure against moisture from the earth, and add to the superficial dimensions of the structure. Such high foundations for houses of this character afford a proper background for the grasses and shrubbery, usually surrounding them. The irregularities of the principal building; the steep, dark-slated roofs, with their heavy projecting cornices, truncated or hooded gables, and enriched barge boards, together with the stoops and bay windows, are proportioned and arranged to assimilate with each other, and contribute to gracefulness and harmony....**Cellar,** (fig. 2).—Hight 7 feet. Seven good sized windows admit an abundance of light, and afford thorough ventilation....**First Story,** (fig. 3).—Hight of ceiling 10½ feet. The rooms are unusually large, and arranged to be pleasant, comfortable, and convenient. The front entrance has large double doors. This hall contains the principal stairs, which are of "platform" construction. We prefer this form whenever the general plan allows it, as such stairs are much easier, less dangerous, and appear better

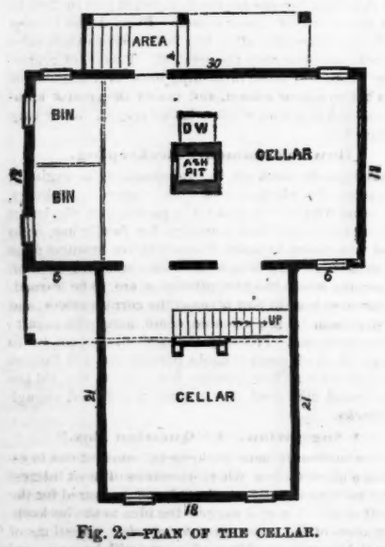


Fig. 2.—PLAN OF THE CELLAR.

than the usual long, straight flights. The hall connects with each principal room, obviating the too frequent necessity of passing through one room to reach another. The Parlor has a fire-place, adapted to either a grate or fire-place heater, (we should prefer the latter in this case, supplied with heating-pipes for warming the chamber above), and is provided with a marble mantle. A large bay window admits sufficient light, and affords a pleasant out-look. The remaining sides of this room are unbroken, leaving ample space for furniture, pictures, etc. The Dining or Living-room is intended as the most agreeable and pleasant room in the house; it has a fire-place with hearth openings, adapted to a "low down" grate, which is a good substitute for the old home-like fire-place, and affords an opportunity for a generous and cheerful fire, and insures the most perfect ventilation. The ashes from these hearth fires fall into the ash-pit below them, thus obviating the necessity and dust of their daily removal. A marble mantle with a large hearth, one bay and three plain windows, and a closet, are provided for this room. The windows afford plentiful light, and views from front, side, and rear, thus assuring a homelike, cheerful apartment. The Kitchen is pleasantly situated has 4 windows for light and ventilation, and is planned with especial regard for convenience. It is in proximity with the principal hall, rear entry, and cellar stairway, has a large pantry, and two closets, and contains a large fire-place, with a range, boiler, sink, and wash-tubs having pipe attachments for hot and cold water. The dimensions of the fire-place are 2 feet 10 inches wide, 5 feet 6½ inches high, and 1 foot 9 inches deep,

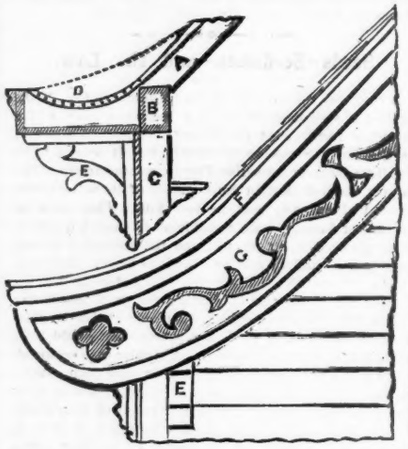


Fig. 5.—CORNICE, GUTTER, AND BARGE-BOARDS.

with a hearth stone 2 feet wide and 4 feet long. The Range is fitted into the fire-place, and has a water-back, elevated oven, and warm-closet, and is connected by pipes with the boiler. The Dumb-waiter, shown on the plan at the right of the fire-place, is intended as a "coal lift," which will save many steps and much hard labor running for coal. This is simply a box, holding 3 bushels (12 scuttles), constructed of 1¼-inch floor planks, with wood runners 3 feet long, on two opposite sides, conforming to grooves made in stationary planking in the cellar, and is suspended by weights, with strong ropes, passing over pulleys fastened to the underside of the floor beams. The upper portions of this closet may be fitted with shelving and hooks, as desired. The large kitchen Pantry, thoroughly shelved, is in the "addition" that adjoins the kitchen, and is built in combination with the rear stoop. The Entry, conveniently situated, communicates between the kitchen and dining-room, and with the back stoop through the rear door.... **Second Story.** (fig. 4).—Hight of ceiling 9 feet. This story is divided in the simplest manner; has a hall, three large chambers, with closets for each, and a bath-room, all with sufficient windows for light and ventilation. Each principal chamber has an open fire-place, adapted to grates. Chimneys, centrally situated, radiate most of their heat into the rooms, thus saving fuel. The Bath-room has a French bath-tub, with cold and hot water, and a seat-closet. The Stairway to the attic story is ceiled in over the principal stairs, with a door at the foot. The Attic has three apartments, two in-

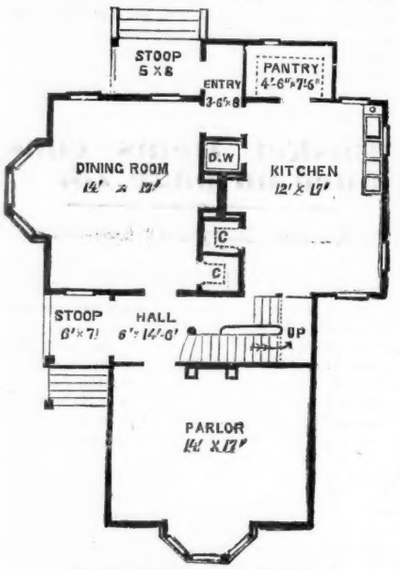


Fig. 3.—PLAN OF FIRST FLOOR.

tended to be plastered and finished as chambers; the third or larger one, is unfinished for an open garret.....**General Construction.**—The Excavations are 2½ feet deep, and the loose earth is graded around the building at completion, leaving 4 feet of the foundation exposed to sight. The Foundation-walls are built as described on page 212, July *American Agriculturist*, 1875. The sub-sills of the windows, and the steps and coping of the area, are of blue stone. The chimneys being near the center are not connected with the foundation walls: The rear one is constructed in box form, below the first floor, as a receptacle for ashes, and has a small iron door near the bottom for removing the ashes. The principal frame work is of sound pine or spruce timber, of the sizes mentioned in the estimate below. When practicable, we would use pine timber for all sills and posts, as the least liable to decay, and spruce for the girts and beams, or account of its quality for stiffness. The siding is of two thicknesses of boarding, as described on page 253, *American Agriculturist*, July, 1875. The principal Roof is constructed at the angles of 45 degrees, securing valuable space for attic rooms, and is covered with dark slate laid on hemlock boards, with tarred paper between. The roofs of the stoops and bay windows, and all gutters and valleys, are of I. C. Charcoal tin, laid on hemlock boards. The method of constructing the cornice, gutters, and barge boards of the principal roof, is shown in detail in fig. 5. *A*, Rafter of

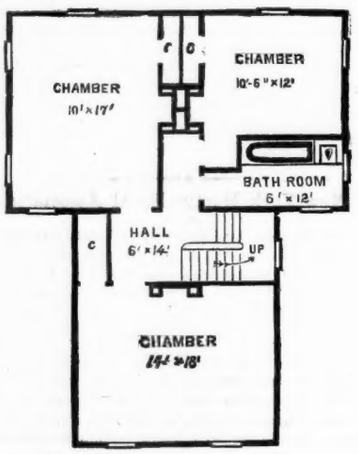


Fig. 4.—PLAN OF SECOND FLOOR.

3 x 4; *B*, Plate of 4 x 6, placed 14 inches above the attic floor; *C*, Post of 4 x 7 timber; *D*, Gutter, having no abrupt angles to bother the tinsmith, or

impair his work, but is of circular form, and stayed with 2-inch furring lath, on which the tin is smoothly and easily laid. *E*, Bracket constructed of 2x 4, with simple scroll, sawed from 4 x 6 timber. *F*, Crown molding, of 1¼ x 3½, worked solid; *G*, Barge board with the crown molding attached; this closes the ends of the gutters to the hight of the dotted line at *D*. The stairs, interior trimmings, and the general painting, are intended to be similar to those described on page 334, September, 1875.

In the estimate appended will be found a full schedule of the materials required to construct, and fully develope a house by these plans. The quantities given may be relied on as correct, and their cost is compiled from the prices now ruling in this vicinity.

Estimate:

69 yards Excavation, @ 25c. per yard			$ 17.25
18,500 Brick, (furnished and laid), @ $15 ₱ 1000			277.50
53 feet Stone Sills, Steps, and Coping, @ 30c. per ft			15.90
841 yards Plastering, complete, @ 35c. per yard			294.35
250 yards Stucco Cornices, at 25c. per yard			62.50
4,903 feet Timber, @ 2c. per foot			98.06
viz. 2 Sills, 4x8 in. x 30 ft. long.	Ties, 4x6 in. x 302 ft. long.		
2 Sills, 4x8 in. x 22 ft. long.	Plates, 4x6 in. x 151 ft. long.		
3 Sills, 4x8 in. x 18 ft. long.	75 Beams, 3x8 in. x 18 ft. l'g.		
8 Posts, 4x7 in. x 22 ft. long.	54 Rafters, 3x4 in.x 13 ft. l'g.		
500 Wall Strips, 2x4x13, @ 13c. each			65.00
320 Sheathing, 9½ inches, at 25c. each			80.00
170 lbs. Tarred Paper, @ 3c. ₱ lb			5.10
320 Siding Boards, 9½ in. @ 28c. each			89.60
Materials in outside dressing and Cornices			90.00
161 Hemlock Boards, principal roof, 10 in., @ 20c. each			32.20
14¼ squares of Slate, @ $9.00 per square			130.50
806 Flooring, 9½ in. @ 28c. each			85.68
2 Stoops, complete, @ $50 each			100.00
2 Bay Windows, complete, $150; Stairs, com'e, $100			250.00
21 Plain Windows, complete, @ $12 each			252.00
7 Cellar Windows, complete, @ $6			42.00
22 Doors, with base and trimming, complete, @ $10 an.			220.00
2 Marble Mantels and 3 Shelves, complete			68.00
1 Range, (with elevated oven and warm closet,) com'e			80.00
Plumbing and Gas-pipes, complete			175.00
Coal-lift and Shelving, complete			25.00
2 Rooms in Attic, finished, complete			60.00
Nails, $20; Bells, and Speaking Tubes, complete, $15			35.00
Painting, $240; Cartage $40			280.00
Carpenter's labor not included above			250.00
Extra for Incidentals			29.36
Total cost, complete			$3,209.00

Should it be desirable to reduce the cost of building by this plan, it may be done without changing the principal outlines or arrangements, by the following deductions and omissions, viz:

	Saving.
Foundations reduced in hight from 7 ft. to 6½ ft	$20.00
Five cellar windows instead of 7	12.00
Inclosing with single thickness siding	80.00
Roof of shingles instead of slate	60.00
Four plain windows, instead of the two bays	86.00
Deduct 1 window in each: dining-room, kitchen, b'h-r'm	36.00
Reduce the cost of windows and doors, each $1.50	61.50
An ordinary range, instead of one with an elevated oven	40.00
Omit the finish in attic	60.00
Omit plumbing and gas-pipes	175.00
Omit coal-lift, bells, and tubes	30.00
Total reductions	$563.50
Making the cost	$2,536.50

Science Applied to Farming.—XIV.

By Prof. W. O. Atwater, Wesleyan University, *Middletown, Conn.*

Using Poor and Selling Better Hay....Prof. Storer's Testimony....Cotton-Seed as Fodder.—Facts for Farmers in the North and South.

One of the points urged in the last article was, that it might often be excellent economy to feed out the poorer hay to stock on the farm, mixing it with concentrated foods to make it equivalent to the best hay, and thus save the latter to be sold for cash, like any other marketable product. This was brought out, as it will be remembered, by comparing the chemical composition and feeding value of several varieties of fresh and salt-marsh hay, with the better qualities of upland hay, and with young grass. The marsh and bog hays are too poor for ordinary feeding; they lack digestible substance, and especially albuminoids and fats. To enable stock to thrive upon them, we must supply the lacking material. For this purpose, clover, or concentrated foods like oil-cake, bran, grain, or roots, will suffice. The nitrogenous foods will be most economical, because they furnish the largest proportion of albuminoids. To the illustration given of the successful working of this plan in practice, I add the testimony of Prof. Storer, of the Bussey Institution, by whom the investigations of the *marsh hays* referred to were made. In speaking of their value as fodder, Prof. Storer remarks that:

"**Marsh Hays**

constitute one important resource of the farmers of New England, which will be doubtless availed of in the future as in the past, and the more fully, in proportion as their real significance is more clearly understood. There are few more interesting problems for the farmers of any region to work out, than those which relate to the judicious utilization of the, comparatively speaking, innutritious kinds of food that are produced upon the farm, and are too coarse and bulky to be merchantable. Such problems have lost much of their former difficulty in these days of cheap transportation, when, besides the old resoures of root crops, such foods as grain, bran, feed, cotton-seed meal, and other waste products may be bought almost everywhere; and they are, of course, specially easy, when the rough forage itself is in itself fairly good, as the bog and salt hays appear to be when contrasted with the straw that is so large a component of many of the fodder mixtures of Europe."

"It would seem to be plain that there are many places in New England, where it would be not merely good practice, but really excellent farming, to feed out on the farm the hay from coarse natural herbage, with the addition of small quantities of some of the concentrated forms of food, and to send off the farm, in so far as might be practicable, the more costly upland hay, to be marketed like any other merchantable product. It must often be true, all things considered, that for home use the rough, low grade hays are actually better fodder than English hay."

Prof. Storer does not seek to deter farmers from draining their boggy meadows, or embanking their salt-marshes, for, as he says, "there never has been any question, but the agricultural product of New England might be enormously increased, if but a fraction of the wild low land, that is susceptible of improvement, were subdued." But, at the same time, "the natural products of the wet lands are by no means wholly worthless, and whatever value they do really possess, be it large or small, should be clearly recognized, and allowed for, and put to use."—Prof. Storer speaks here of New England, but his remarks apply equally well to other parts of the country, wherever there are poor hays to use and stock to feed.

One of the great sins of the American people, is their wastefulness, and a deal of the blame for this lies at farmers' doors, sparing as they are. What with the land that lies under weeds, manure that is leached away by rain, or carried off in decaying into the air, and fodder that is but partially utilized, it is no wonder that they complain of small gains and hard living. And in this case, judicious feeding of low-land hays, by which the good they contain may be digested and turned to the best account, instead of being wasted, would save more than can be easily estimated.

Cotton-Seed for Fodder.—A Word to Cattle Raisers in the Southern States.

Mr. "A. W. K.," of McKinney, Texas, writes that the farmers in that section know nothing of cotton-seed *cake* or *meal*, but have plenty of the seed in its natural state, and he inquires about its composition and proper use. The leathery hull of the cotton-seed consists chiefly of woody fiber, which is quite indigestible, and is said sometimes to cause irritation of the stomach and intestines of horses and cattle, unless softened by boiling or soaking before it is used. The rest of the seed consists mainly of albuminoid substance and oil, both of which are in the highest degree nutritious. By great pressure a large part of the oil may be forced out, leaving a pomace which is called cotton-seed cake, or when finely ground, cotton-seed meal. When the hulls are removed from this, it is said to be "decorticated."

I am not aware that the feeding value of the seeds in their natural form, has ever been tested by direct and accurate trial. But the digestibility of the cotton-seed cake by sheep, was tested not long since at one of the European Agricultural Experiment Stations. The cake was only partially decorticated. Its composition, as compared with the seed from which it was made, was known, and other experiments indicate that the expressed oil would be almost wholly digestible. So, after finding what proportions of the cake the sheep digested, the experimenters were able to calculate, with tolerable accuracy, how much they would have digested from whole seed. Here are the figures. The seeds are calculated to contain 7.7 per cent water, 7.8 per cent mineral matters, and 84.5 per cent of organic substance, (7.7+7.8+84.5=100). The organic substance alone is taken into account.

Table 23.

COTTON SEED.

	Organic Substance.	*The Organic Substance consists of:* Albuminoids.	Crude Fiber.	Other Carbo-hydrates	Fats, (Oils.)
	lbs.	lbs.	lbs.	lbs.	lbs.
100 pounds contain	84.5	22.8	16.0	15.4	30.3
Of this is digestible	56.0	17.1	11.6		27.3

So it seems that 100 pounds of cotton-seed would furnish about 56 pounds of digestible, that is to say, actually nutritious material. And this would be of the very richest sort, for it would contain 17 lbs. of albuminoids, and 27½ lbs. of oil—both most valuable ingredients of the food.

How to Use Cotton-Seed,

is a matter best learned by experience. Mr. K. reports that the farmers in his section "consider it a valuable food for milch cows," and that they "mix it with corn or bran, or both, and feed with prairie-hay, wheat straw, or shucks." He inquires "whether this is the best disposition that can be made of the above enumerated foods?" I should say, quite decidedly, yes, so far as the question can be answered by chemistry. The cotton-seed furnishes just what is lacking in such kinds of forage as low grade hay, straw, corn-stalks, and husks, viz., albuminoids and fats. But I think the good effect of these coarse foods, and of the cotton-seed as well, would be increased by cutting or grinding, and boiling or steaming. Some definite reports of experience in the feeding of cotton-seed, by such men as Mr. K., would be very useful. The subject is an extremely important one. They must be good for fattening, but will they make "prime" butter?

Cotton-Seed and Manure.

It must be borne in mind that cotton-seed is very valuable for the manure it makes, as well as for the nutriment it contains. The ingredients which give the chief value to our ordinary commercial fertilizers are, nitrogen, phosphoric acid, and potash. The manure which domestic animals would ordinarily produce from a ton of cotton-seed, after utilizing all its nutritive matter, would contain more of these than exists in a ton of some of the poudrettes, for which hundreds of farmers in this part of the country are deluded into paying $25 a ton.

Mr. K.'s letter is one of a pleasant kind to receive. His statements and inquiries are squarely put and to the point. Among other things, he refers to some experiments with neat cattle, described in these articles, and inquires whether the results would be the same with horses and mules.—To this question I can give but a partial answer. The experiments, such as have been described, have been performed with horses, oxen, cows, sheep, goats, and swine, but not with mules. More have been made with neat cattle, sheep, and goats, than with horses or swine. As regards

The Digestive Capacities of Different Animals,

contrary to the common impression, different classes of ruminants seem to digest the crude fodder in about the same proportions *when they are properly fed*. That is to say, from a hundred pounds of a given food—as hay, clover, or straw—oxen, cows, sheep, and goats digest nearly the same number of pounds of albuminoids, carbo-hydrates, crude fiber, etc. Horses seem to digest less of these foods than ruminants.—The following table gives the average results of a large number of experiments, by Henneberg, Stohmann, Kuehn, Wolff, Hoffmeister, and others, on the digestibility of meadow hay, ordinary "English grasses," by different animals. Out of every 100 pounds of the following substances contained in the hay, the animals digested the number of pounds set under each, viz:

Table 24.

Animals fed on meadow (upland) hay.	*Total Organic substance.*	*Albuminoids.*	*Crude Fiber.*	*Other Carbo-hydrates*	*Fats.*
Oxen	63.3	63.6	63.1	69.7	45.
Milch cows	65.4	51.9	60.	70.4	...
Neat cattle in general	63.5	60.5	62.1	64.4	45
Sheep	56.6	52.5	59.3	61.2	33.5
Goats	...	56.6	57.6	61.2	43.8
Horses	40.6	46.2	21.4	53.5	75.1

It must be remembered, however, that different

animals may vary greatly in their utilization of a given food, that is, in the amount of production therefrom, even though they may digest the same amounts. For instance, it is a familiar fact that cows or sheep of different breeds, or different individuals of the same breed, will yield widely varying amounts of milk from the same amount of fodder. This may be due, not so much to the difference in the quantity they digest, as to the difference in their utilizing of the digested material.

NOTE TO CORRESPONDENTS.—I must beg the pardon for long delays in answering a number of letters. The fact is, they sometimes come faster than I can attend to them. I hope to be up soon, however, and the letters are always welcome.—W. O. A.

A Talk about Artificial Fertilizers.

Why needed—What they are—Good and bad—Explanations.

The following from a letter by Mr. E. N. Phelps, of Chittenden Co., Vt., puts into words the thoughts of thousands of farmers in all parts of the country. "We farmers in Vermont are often troubled by early and late frosts, which often injure our crops. Many of us have let our land run down until it is hardly worth cultivating. Now we want something that will quicken the growth of our crops, and increase them to the point of profitable production. We cannot produce on our farms all the manure we need, nor can we all afford to buy and haul bulky manure from the towns. We hear a good deal about guanos, superphosphates, bone-dust, and other artificial manures, and believe that if we could be sure of getting the genuine article at fair prices, it would pay many of us to use them. Some have had such poor success with them, that we are afraid to invest. Still we must have something which we can handle and apply easily, and be sure of getting a return. What shall we do?"—Mr. P. gives expression to the general complaint of the poor quality of the commercial fertilizers in the market, and the frequent inquiry as to how to get good ones at reasonable prices. This complaint is only too well founded. Yet there is less fraud in the trade in fertilizers than many farmers think. And the best ones are often wrongly used and bring small returns.

What Constitutes a good Fertilizer?

No ordinary cultivated plant can thrive without a sufficient supply of each of a number of substances needed for its food. With an abundance of all of these, in forms in which the plant can use them, and with other circumstances favorable, the plant will flourish and the yield will be large. But if the available supply of any one of them be too small, a light yield is inevitable.—Every ordinary soil contains all of the ingredients of plant-food. In "worn-out" soils the available supply of one or more of these is generally insufficient.

Fertilizers supply the plant with food which the soil lacks. Barnyard manure not only does this, but also improves the soil as a living place for plants. Lime and plaster (sulphate of lime) are necessary as plant-food, but, as fertilizers, they are chiefly valuable in rendering other plant food available to crops. The ingredients of plant-food generally most lacking in our cultivated soils, are nitrogen, phosphoric acid, and potash. The usefulness of guanos, superphosphates, bone manures, poudrettes, potash-salts, and other similar fertilizers, depends mainly upon these ingredients. Such fertilizers are generally more or less valuable in proportion as they contain larger or smaller percentages of *nitrogen*, *phosphoric acid*, and *potash*, and as these are in a form more or less available to the plant. If all the other conditions for a profitable crop of corn or turnips are fulfilled in a soil, except that phosphoric acid is deficient, then phosphoric acid must be supplied. This may be done with bone, which contains a large percentage of phosphoric acid combined with lime as "phosphate of lime."

Phosphates and Superphosphates.

But the action of bone, in its natural state, unless ground to extreme fineness, is very slow. The food of the plant must be dissolved before it can be absorbed by the roots, and the phosphate of lime in the bone is comparatively insoluble, and becomes very slowly available to the plant. By treating bones with sulphuric acid, (oil of vitriol), the insoluble "bone phosphate" is converted into a "superphosphate," which is readily soluble, and *can be used by the plant at once.* Superphosphates of lime are usually prepared in this manner. Chemical analysis shows a great difference in the superphosphates of our markets. Some contain as little as 7 or 8 per cent of phosphoric acid, of which 2 or 3 per cent is soluble. Indeed, some have been found to contain *no soluble phosphoric acid*, and are not "*super*-phosphates" at all. Other samples contain 12, 15, or 20 per cent of soluble phosphoric acid. An English superphosphate lately sent to our Experiment Station for analysis, contained 26.4 per cent of soluble phosphoric acid. A fertilizer with 2 per cent, (2 lbs. per 100), of soluble acid, would furnish only 40 lbs. to the ton of 2,000 lbs. A ton of this last would contain some 528 lbs.!

Nitrogen is another important constituent of artificial fertilizers. Some of the higher grades of nitrogenous fertilizers sold contain 10 or 12 per cent, or even more of nitrogen, while the lower grades often contain less than 2 per cent! Among the nitrogenous fertilizers, sulphate of ammonia, which consists of ammonia and sulphuric acid, and nitrate of soda, composed of nitric acid and soda, are very rapid in their action. Peruvian guano, which is rich in nitrogen, is likewise very active; while dried blood, slaughter-house refuse, and fish scrap are somewhat, and raw bones, hair, etc., considerably less active, though they all contain considerable nitrogen.

Potash.—The "German Potash Salts."

from the mines at Stassfurt, are at present the most important source of potash for agriculture. There are various grades of these, characterized by the amounts of potash and other ingredients they contain. The poorest grades contain as low as 7 or 8 per cent of potash (potassium oxide). Besides the compounds of potash, they contain common salt, and other materials of little agricultural value, including more or less chloride of magnesium, which may be positively injurious to crops. The higher grades have little or no chloride of magnesium, little common salt, and potassium compounds corresponding to 20 to 50 per cent of potash. In some of the German salts the potash is present as sulphate of potash, and in others as chloride of potassium, or what is called by dealers "muriate of potash." The "sulphates" are, on the whole, preferable, but the potash in these is more costly than in the "muriates." The muriates (properly chlorides) sometimes injure the burning quality of the leaf of tobacco, and decrease the amount of starch in potatoes, and of sugar in sugar-beets, while the sulphates are always safe; but for grains, grass, and other fodder-crops, and for wet soils, the muriates are highly recommended. The potash in all these salts is soluble.

All crops need potash as much as they do phosphoric acid or nitrogen, and its usefulness in ashes is well known. It is often deficient in soils, and its use as a fertilizer must increase. For American farmers the high rather than the lower grades of German potash salts must be advisable.

The table below shows the

Composition of Some of the Fertilizers Ordinarily Sold in the Northern and Eastern States. The Analyses are, with one Exception, taken from late Reports by Prof. S. W. Johnson, Chemist of the Connecticut Board of Agriculture.

ESSENTIAL INGREDIENTS.		1 per cent.	2 per cent.	3 per cent.	4 per cent.	5 per cent.	6 per cent.	7 per cent.	8 per cent.
Phosphoric Acid	Soluble	4.7	9.9	3.4	.....	.....	.....	.....	.....
	Reverted*	9.3	1.1	3.7	.....	.....	.....	.....	.....
	Insoluble	3.2	2.3	0.3	.....	.....	.....	.....	.....
	Total	17.2	13.3	7.4	21.5	18.0	6.3	11.3	2.2
Nitrogen		8.5	3.6	2.3	3.7	2.8	2.1	0.2	1.5
Potash		3.1	.....	.....	.....	.....	.....	.....	.....
Retail price, ton		$73	$50	$50	$47	$45	$32	$45	$25

1. Guanape Guano.—2 and 3. "Ammoniated Superphosphates."—4. Pure Ground Bone.—5. "Bone Meal."—6. "Bone Dust."—7. "Animal Dust."—8. "Double Refined Poudrette," contained of sand, fragments of brick, coal, etc., 63.1 per cent, or 1,262 lbs. to the ton. * The terms "reverted," "reduced," "precipitated," are applied to phosphoric acid existing in a state of fine division, and ranking in solubility midway between "soluble" and "insoluble."

Some of the "phosphates" sold in our markets contain small percentages of potash. The value of most of them, however, is based upon their phosphoric acid and nitrogen. How these vary may be seen in the above figures. No. 2, for instance, contains nearly twice as much of these valuable ingredients as No. 3, and yet both have been sold at the same price. Though so few illustrations can not give a full exhibit of the state of our fertilizer market, they nevertheless show the need of definite knowledge of the composition of fertilizers, and that the best are generally the cheapest.

Composition of Ordinary Fertilizers.

These—nitrogen, phosphoric acid, and potash—being the constituents most needed, the majority of our commercial fertilizers contain two, and some of them all three of the above named ingredients, as is illustrated in the table above. The figures are taken from actual analyses of the fertilizers commonly sold in the northern and eastern markets.

What Fertilizers to Use.

Now Mr. Phelps, like his brother farmers, will wish to know what fertilizers to select. To decide, he must first learn what his soil lacks, and then see where he can obtain the needed ingredients in the best form, and at the lowest cost. Whether his land needs nitrogen or phosphoric acid, or potash, or all of these, he can best learn, unless he has the experience of himself or others to guide him, by actual experiments, on a small scale, with high-grade phosphates, nitrogenous fertilizers, or potash salts.

If he desires simply to enrich his land, and is in no special hurry for a return, let him select those which furnish the largest amount of nitrogen or phosphoric acid, or potash, for his money. But if, as he says, he wants a fertilizer to act quickly, and bring his crops forward, so as to keep them out of the way of frost, or prepare them for an early market, let him select superphosphates with a good precentage of soluble phosphoric acid; and nitrogenous manures, with the nitrogen in a readily available form, as nitrate of soda, or sulphate of ammonia, or Peruvian guano; or if these are not easily to be had, dried-blood, fish-scrap, or finely pulverized, steamed done-dust. There is, practically, but one way that farmers can make sure of

Getting Good Fertilizers at Reasonable Prices.

That consists in knowing the composition of the wares they buy, and in choosing those which contain the needed ingredients in the best form, and at the lowest price per pound. The great difficulty here, is in learning what the fertilizers actually are. To obviate this, let every farmer insist that there shall be established in every state, as there is now in Connecticut, an *Agricultural Experiment Station*, where they can have their fertilizers analyzed, at small cost, or for nothing, and a deal of other work done for them besides.

W. O. ATWATER.

Ogden Farm Papers.—No. 72.

BY GEORGE E. WARING, JR.,

If the Commissioner of Agriculture, when he sets about defending any branch of American stock-breeding from injurious statements, as to the importation of foreign cattle, would give himself the trouble to consult statistics, which must be easily accessible to his office, he would not lessen the usefulness of his department. The facts are as follows, some time ago a cattle-breeder in Maine made the gushing announcement that 3,000 cattle are annually sent from the Island of Jersey to the United States. He reasons therefrom that as the American Jersey Cattle Club records the pedigrees of imported animals, and their descendants, their record is necessarily a humbug, because Jersey cannot furnish so many animals. The Agricultural Society in Jersey takes the matter up, and says that if such

importations are made, (as from Jersey), they are of course fraudulent. The United States Consul in the Jersey district, transmits the resolutions of the Society to the U. S. Department of Agriculture, and the discussion is taken up in this country in a manner that shows a very general wrong impression concerning the facts connected with the importation of Jersey cattle. As secretary of the Cattle Club, and as editor of its Herd Register, I have probably had submitted to me for entry, at least 95 per cent of all animals said to have been imported from the Island of Jersey, and in every case where the facts of importation have been sufficiently established, (save in the case of animals imported very recently without the certificates now required), the entries have been made. These importations extend through the whole period since Taintor and Motley made their first importations, which may be regarded as the foundation of the stock of Jersey cattle in the whole country. The total number of entries of imported and home-bred animals up to the end of 1875, is 6,526; of these only 1,249 are imported animals, being an average for the whole time, (twenty-five years), of fifty per annum. In the years 1868 to 1870, there were two or three rather large importations which would probably carry the average for those years to 100 each, and would reduce the average for other years in proportion. It would have been easy for the Department of Agriculture, by reference to the records in the Treasury Department, to ascertain the exact number imported in any one year, and to have set at rest a question the discussion of which has been the opposite of beneficial to the interests of Jersey breeders. Incidentally to this discussion, the Club has been much reviled for having established rules, which are said to be injurious to many owners of this breed, and there have not been wanting those who ascribe our action to our desire to preserve a monopoly of these animals. No rule of the Club has ever been established for the purpose, nor with the effect of upholding the interests of its members, as opposed to those of breeders who are not members, nor have the restrictions placed upon the recording of imported animals, had any other object than to prevent the registry of animals imported by speculators to take advantage of the growing popularity of the race here, often without regard to quality, and often under circumstances which lead us to suppose that not only had inferior animals been selected in Jersey for sale here, but that good animals from Jersey had been replaced by inferior animals in England, (sent out under the Jersey certificates); and that not seldom English bred animals, with questionable pedigrees, had been offered as coming from the Island. The action of the Club has sometimes, no doubt, worked to the disadvantage of innocent and worthy parties, whose stock, could the facts be known, is absolutely perfect; but at the same time, we have worked for the general benefit, and I am satisfied that our rules have, on the whole, secured a very satisfactory result, as is attested by the increasing popularity of the Jersey cow in every part of the country, where butter making or milk for the family has been the aim.

"Permit me to ask you a few questions about stock-breeding. I have grown up on a Long Island farm of one hundred acres, and expect to have the management of one-half of it after this year. I like farming and intend to stock it and become a good farmer. I like to have good stock, and intend to keep thoroughbred cows and pigs. I prefer the Berkshire pigs, but as to cattle I am undecided. Have long been an admirer of the Devons, but have not much acquaintance with them. From what I have seen, and from the accounts I read, I think I should like them better than any other sort, and wonder that they are not more popular. The cows most profitable here are such as produce good *butter* and good *beef*. There are many Jerseys being introduced here, and they appear profitable for butter. I am half inclined to adopt them instead of the Devons. I shall not attempt to keep both. For my own use should prefer Devons, but don't know whether I could sell them so well. Will you give me your estimate of the relative merits of the two breeds? Would you advise me to attempt to breed thoroughbred stock on so small a farm? I intend to soil, and to feed liberally. How many ought I to be able to keep?"

This letter is a typical one, and represents the sort of questions that all agricultural writers must be frequently asked by new beginners. And it is no small responsibility that one has to assume in answering them. So much of the success of farming, and especially of stock-breeding, depends on the character of the farm, and especially on the character of the farmer, that one always risks the danger of leading an incompetent or improperly situated person into a course which, (while it would be the best under certain circumstances), would not be the best for the applicant. What I say on this subject must be accepted with the proviso that the man and the farm are suited to the purpose.

The Devons are unquestionably a fine race of cattle, many of them are good milkers, their milk is often rich and well suited for profitable butter-making, and when their milking days are over, they fatten easily into good beef, and they have the especial advantage of making the quickest, handsomest, and most tractable working oxen. For all this, they seem to be losing rather than gaining in popularity, and I am not now acquainted with a single conspicuous instance of their being bred as a specialty, while I do know of a number of former Devon breeders who have sold out their stocks and gone into other breeds.

There lurks in this letter a fallacy which is very wide-spread; that is, the idea that in considering the adoption of a breed for dairy purposes, a preponderating regard should be had to the value of a cow as beef, after her milking is done. This, of course, is valuable and important, but its value and importance are much less than secondary. Let us put the probabilities for the yield of butter at from 200 to 225 lbs. per cow, a difference that may very easily be secured by the selection of good representatives of the best breed, or of the second best. Take the average duration of profitable milking as ten years, and we have a difference in butter products of 250 lbs. worth at 30 cts. a pound, $75. In the one case let us assume that we have a worn-out thin cow worth, (to fatten), $20, and that in the other case we have a well-constitutioned larger animal worth, (to fatten), $50; this is the true standard, in considering the worth of the cow for fattening, we have to regard the cost of feed, and care, and time. Here is a difference of $75 in the income from butter, and of only $30 in the value for making beef. I have purposely neglected the citation of large yields and fancy prices, and have presented the case in its proper agricultural bearing for most localities. It seems to me to prove very clearly that no farmer who looks to the manufacture of butter as his business, can afford to consider the beefing value of his used-up cows, as an offset for inferior butter production. Thoroughbred animals get their fancy value from fancy reasons less largely than is supposed. The butter of the Jersey, the milk of the Ayrshire, and the beef of the Short-horn are at the bottom of the fancy prices for all of these breeds, for it is this, after all, that must be looked to for the permanent value of any race. Those who embark largely in the raising of thoroughbreds often pay amazing prices for good specimens, but they have always the fact to fall back upon, that their animals will multiply rapidly, and that a slight advantage in practical value will, with their increasing herds, soon help to make up for their large outlays. They always believe, of course, that they will find customers able to appreciate, and willing to pay, for peculiar excellence, but the whole question, in its wide bearings, finally settles itself down upon the practical agricultural advantage of the race. Short-horns, however fine, that are deficient in the quality of continuing in their progeny the beef producing characteristics; beautiful Ayrshires, well up in all the fancy points, whose descendants will not be good milkers; and Jersey cattle of the fanciest character, whose families are poor butter makers, will always fail in the end to be highly appreciated.

It will therefore be the wisest course for any beginner in stock-breeding, who is willing to invest the necessary capital, and to give the care and attention requisite for success in thorough breeding, to select such animals as are, in the first place, best adapted for the home industry that he intends to pursue, and in the second place, to get such specimens of the breed as will win favor among those who are to be depended upon as buyers at fancy prices, but a prudent man will always regard very high prices as so much lucky addition to his income. He will not depend upon it as an element of his regular business. For example, if one can establish a herd of Jersey cows which will make an average of 250 lbs. of butter per annum, and is so situated that he can secure (net) 50 cents per lb. for his product the year round, so that he may be sure of a gross income of $125, he can afford to pay a very high price for thoroughbreds, or if he has time and patience, he may buy a smaller number of remarkably good females, at still higher prices, and build up his herd, by a few years of careful breeding. If at all well situated, he may depend on a yearly average value of, say $40, for his weaned calves of both sexes. This will pay the interest on the cost of his original stock. Then, in proportion as he is fortunate in his judgment and arrangement, and in his skill in giving to his herd a good reputation, he may increase the value of his progeny to an amount that will add a very handsome profit to a business that has already been fairly profitable and satisfactory. Referring to my own experience, although I have bought many animals for from $150 to $250 each, by far the most profitable ones have been those which have cost me several times these sums. I have already referred in these papers to a cow for which I paid $500, (when this was a much higher price than it would be now), and which has returned me, in her progeny, nearly $2,000 cash, and more than that amount in the value of animals still on hand, these increasing year by year, and giving a value to the herd that reduces the original investment to insignificance. One may buy ten cows of good quality and good pedigree, for $2,500, but the same money *judiciously* invested in one bull and two cows, would probably bring a larger profit in the end. As to the amount of stock that may be kept by the soiling system, on a farm of fifty acres, it is impossible, without knowing the circumstances, to say. The character of the soil has much to do with it, and the character of the management more. As a general rule, perhaps, it would be the wisest course to start with ten cows, even though it might be necessary at first to buy some hay. The stock can be increased by the keeping of the best of the progeny, up to any amount that the farm may be competent to support. The rock on which any beginner is most likely to split, is to be found in the fact that there are always plenty of shrewd breeders, with capital, ready to offer good prices for the best of the increase. No matter how tempting the price, if one has an eye to ultimate success, the best animals must be retained, unless one knows where the same price, or a lesser one, can be used to replace them with better animals.

I should say that, as a business proposition, the question in the present case should be whether to adopt Jerseys for butter, or Ayrshires for milk; for Devons, however good they may be for home use, are practically debarred from receiving the high prices that these other breeds bring. Good though they are, in all respects, they have retired from the fancy market.

What Rhubarb Comes From.—*Rheum palmatum* has for very many years passed as the plant which yields this valuable drug, as such it has been long cultivated in gardens which contain officinal plants. Lately another species, and a much more stately plant, named *Rheum officinale*, was brought alive from Thibet to France, and has come into cultivation. It is pretty nearly proved that this produces what was formerly known in commerce as Turkey rhubarb. But now the Russian botanists have proved that the Chinese rhubarb, which comes to Europe through Siberia, is yielded by *Rheum palmatum*. So that this, after all, is one of the genuine rhubarb plants.

How India-Rubber Boots are Made.

A pair of rubber boots is not only a great comfort to those who, like farmers, must be out in all weathers, but where one must continue long at certain kinds of work, almost necessary to the preservation of health. The manner in which crude rubber was affected by temperature, softening by heat, and becoming inflexible by cold, was a great obstacle to its employment for many purposes, for which it is now used, and it is only since the remarkable discoveries of Goodyear, which completely overcame this difficulty, that the manufacture of rubber articles increased to anything like the present extent. What Goodyear's discoveries were, which resulted in the process called "vulcanizing," will appear in our account of the method in which rubber boots are made, which is founded upon a visit to the works of "The L. Candee & Co.," at New Haven, Conn. This is the oldest rubber-shoe factory in the United States, it having been established the same year the *American Agriculturist* was founded—1842. Vulcanized shoes, by Goodyear's process, were first made at this establishment, and its works have grown to be the largest in the country, while the quality of their goods is up to the highest standard.

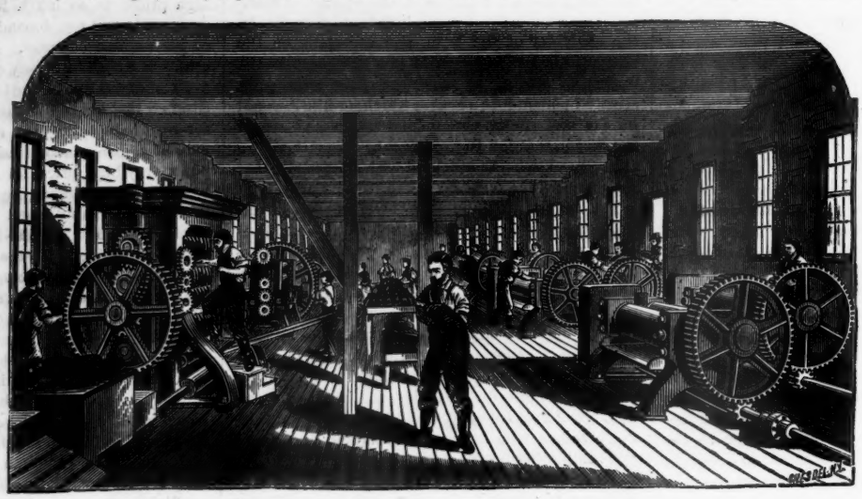


Fig. 1.—THE "GRINDING ROOM" IN THE L. CANDEE & CO. RUBBER WORKS.

India-rubber is the dried milky sap of several different tropical trees; these are tapped, the juice collected, and dried in smoke. The crude rubber is received at the factory in masses of various sizes and forms, much of it being in lumps about the size and shape of a soldier's canteen.

The first step in the manufacture is to cleanse the gum. It is first cut into slices by means of a large and very sharp circular knife, revolving with great speed, and kept constantly wet. These slices are then cut into smaller pieces by means of a "chopper," a machine resembling in action a common hay-cutter; afterward the pieces are reduced to minute particles in another machine, through which a stream of water flows, and washes out every particle of foreign matter. The small particles of rubber, thus cleansed, are now shoveled into another machine, which rolls the gum into rough sheets. These sheets are then taken to the drying-room, where they are hung up to remain three months, or until every particle of moisture is expelled. These operations reduce the original weight as crude rubber from 15 to 30 per cent.

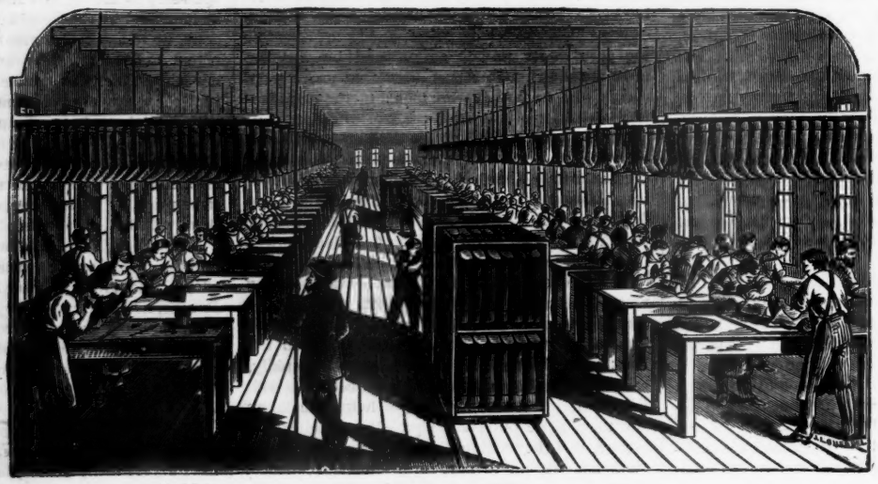


Fig. 2.—THE BOOT ROOM IN THE L. CANDEE & CO. RUBBER WORKS.

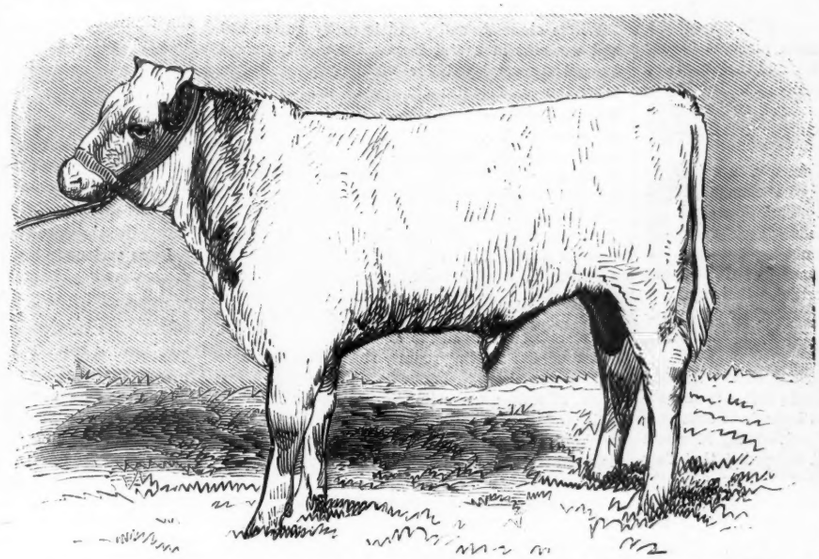
After these sheets of gum are dry, they are conveyed to the grinding-room, an apartment illustrated in figure 1. On the right of the engraving is seen a double row of machines, called "Grinders," in which the rubber is passed through heavy metalic rolls, heated by steam. This process softens the gum, and prepares it for the admixture of the sulphur, which is added in proper proportions in another and similar machine, and thoroughly incorporated with the gum; the object of the sulphur, as already hinted, is to render the rubber insensible to the changes of temperature. To accomplish this result, Charles Goodyear, of New Haven, devoted many years of constant experiment. He finally discovered that by adding to the gum a certain proportion of sulphur, and then heating it to a high degree, a chemical change took place, a compound being formed which would remain soft and pliable in all temperatures, and all the year round. The admixture of sulphur was a grand discovery, and its use was of the greatest benefit, but it led to another discovery—that various other substances could be mixed with the rubber. A demand for cheaper goods led to an extensive cheapening process, and what passed for rubber goods, really contained but a small proportion of that material, the bulk being made up of less expensive substances, to materially lessen the cost. Among the things which have been added to increase the bulk and weight, are various compounds of lead; the oxide of lead, (litharge), and the sulphite, (galena), as well as other heavy mineral ingredients; coal-tar and lamp-black are also used to give a jet-black color, and increase the bulk. Farmers and others who associate weight with quality in rubber boots, have no difficulty in finding a heavy article, but it is made so by the use of foreign substances. This adulteration impairs the quality, and boots so made are sure to crack after they are worn a short time. In view of the poor quality of most of the boots made in this manner, the Candee Co. brought out their "Standard Pure" boot. It will be seen that a boot can not be made *absolutely* pure, as sulphur *must* be incorporated with the rubber, to insure pliability in any temperature, and if the sulphur is not hidden by adulterative compounds, as it very frequently is, it will work to the surface and give the boots a grey or sulphurous look. But to continue our description.

After the gum is well softened and properly mixed, it is run through the calender, the large machine to the left of the engraving, (fig. 1), where it passes between heavy steel rolls, steam heated, and being pressed into sheets of any desired thickness, passes to the room above on an endless belt or apron. In the next machine to the left, the rolls are engraved with the diamond-shaped impressions, which give to the soles the roughened surface, with which every one is familiar. Another machine gives the "ornamental" design for shoe uppers. The soles and uppers, being thus rolled out and conveyed up stairs to the cutting-room, are next cut into the desired sizes by sharp, wet knives, in the hands of skillful workmen.—In another department the linings, whether of red cotton-net for shoes, or of a napped cloth for Arctics, or of the "Esquimaux" woven cloth for boots, are coated on one side with rubber, by passing a batch of gum in company with the cloth, between heated rolls, and after being cut into various sizes, many thicknesses at once by dies in a drop press, are distributed to the hands who make up the boots and shoes.

In figure 2 is given a view of the "Candee Co.'s" boot-room. On either side are the boot-makers at work. The Esquimaux lining is first fitted over the tree, rubber-side out. Then the rubber vamp or leg is laid on, and immediately sticks fast to the rubber on the lining. The workman, however, rolls it down with a hand-roller, so as to remove any air that may happen to remain between the rubber and the lining, and to insure perfect adhesion. This is an important point, for if any air be left between the surfaces, it will expand under the heat to which the boots are often subjected, and will create blisters. Finally the soles are put on, and "rolled down" in the same manner. No pegging or sewing is required. After the boots are put together, they are placed upside down on cars, and rolled into the varnish-room. The common kinds of boots here receive a coat of varnish. The "Standard Pure" boots, however, are not varnished. Next the boots are run into the "heater," to be vulcanized, by heating to nearly 300°, and the boots, after remaining a while, are then run out, and, being removed from the "trees," are conveyed to the packing-room for examination. The "pure" boots come out of a grayish color, which afterwards turns to a whitish yellow—but the cheap boots are of a shiny black, and much more attractive in appearance. After the heels are nailed on, to make doubly sure, the inspector examines every boot. Those that happen to be blistered, or otherwise imperfect, are punched in the top of the leg in front, and are packed and sold as "seconds." After packing, the cases are ready to be shipped.

The Small White Pigs.

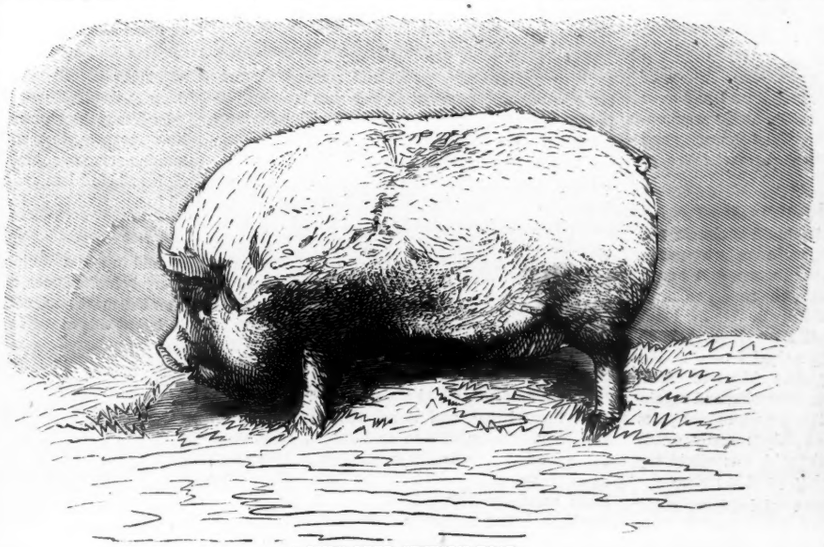
The result of the English shows the past year, has been rather indicative of a decrease in the popularity of the black breeds of swine, and of greater favor shown to white breeds. Color is wholly a matter of taste in that country, where the heat of the sun is never so intense as to make the keeping of black pigs more desirable than that of white ones; and as no one can distinguish a ham or a side of bacon from a black pig, from that from a white pig, (unless it be that a stray black hair has been accidentally left on it,) there is nothing in mere color to make one more desirable than another. Neither is there any reason to suppose that the black breeds have lost their character as rapid and economical pork producers, or that white breeds have gained a point in this respect. Popular prejudice is a thing difficult to account for, and it is especially so in regard to the color of animals of low or high degree. Nevertheless, it has been consulted by those who look for profit in breeding stock, and the fashion having turned in England, the breeders are there giving more attention to the white breeds, and these have the past year appeared in greater force at the exhibitions. Another curious instance of the uncertainty of popular taste, is the varying popularity of the large and small breeds. This oscillates back and forth, just as the fashion in regard to color. We have never yet seen any satisfactory evidence that it pays better to feed small pigs than large hogs, if both kinds are equally pure bred. Locality, cost of feed, and the demands of the markets, have a great influence in deciding the choice in this respect, and we suspect that a well bred hog or pig, well fed and well cared for, will make about the same amount of pork for a bushel of corn, or the same amount of money for the same quantity of feed, whatever breed it may belong to. With us the impression that a black pig is less apt to suffer from the heat of the sun, than a white one, is a great thing in its favor, and will always tend to make the black breeds popular, especially in the southern states. Nevertheless, some people fancy the white breeds, and the Suffolks, Chester Whites, and the Yorkshires are popular with many farmers. The beauty, quick growth, fine bone, and light offal of the small breeds, are very much in their favor everywhere, and the handsome apppearance of a well bred, small, white pig, is very attractive. We give on this page a portrait of a pig of this kind, a well bred white Suffolk. This breed occupies the same place with the white varieties, that the Essex does amongst the black ones. No pig makes better pork, when young, than the Suffolk, and pigs of this breed have dressed 120 pounds at five months old, without being forced. The economy of feeding a pig which has so little waste, the meat of which is placed where it is most valuable, and which has so little bone or head as this, is very great. The food is used to the greatest profit. It is unfortunate that those who raise pigs do not seem to thoroughly understand how much greater profit there is in keeping animals of an improved kind, and in using only pure bred boars, of whatever breed they may fancy, than in raising those from mongrel males which cost more in feed than the pork comes to.



YEARLING SHORT-HORN BULL "LORD LAMECH."—*Owned by Mr. Pickrell, Mechanicsburg, Ill.*

The Booth Short-Horns.

The competition between the rival classes of Short-horns, known as Booth and Bates, is becoming closer. For some time past the Bates stock has been in the ascendent. The Duke and Duchess family, which was Mr. Bates' most successful creation, has for some years past overshadowed all other families and classes of this breed of horned stock. They have become the fashion, and scarcely any price that could be paid for them, has been held to be an extravagant one by those devoted to this fashion. The prices paid for Duke bulls and Duchess cows have been so exorbitant, as to lead easily impressed people to suppose that every excellence that could be brought beneath the hide of an animal, was concentrated in these. But of late the excitement is wearing itself out. Other families of the Bates stock are coming into favor, not exactly eclipsing the Dukes and Duchesses, but causing their brilliance to pale through the newer radiance of the rising lights. The Booth stock is also rising, and those breeders, who have stuck to this class through its evil report, are now reaping the reward of their constancy. In the English show-yards, which are looked upon here as well as there as the best test of both popularity and merit, the Booth animals have swept the field. For three years in succession, animals got by bulls of John B. Booth's breeding, have carried off the first prizes in the cows' class. Mr. Outhwaite's cow "Vivandiere," which is a splendid animal, if we can judge by her photograph, has received premiums valued in all at $5,357, during her show career. And finally the sale ring, the best test of all, has shown that this class of stock is now equally popular with the best of the Bates stock. In September last there occurred a sale of the stock of the late Mr. W. Torr, which was largely bred from the Booth tribes of Short-horns. The result of the sale was an average price for 85 animals of $2,525 each, or $214,650 for the lot. The highest price ever paid in England for a cow, was paid for "Bright Empress," an animal four years old. A three-year old bull was purchased by Mr. Harrison, of California, for $1,300, and a fine yearling bull, "Lord Lamech," was bought by Mr. Pickrell, of Illinois, for $2,940. In the London "Agricultural Gazette" we find an excellent portrait of this animal, taken from a photograph. It is interesting to compare this portrait with that of the "Duke of Underley," the calf of the "10th Duchess of Geneva," which was given in the *American Agriculturist* for September, 1875. This animal is valued at over $15,000, and it certainly is not easily distinguishable to an ordinary eye, however well versed in judging stock it may be, where the great difference in value lies. The Booth animal seems in no way inferior to the Bates, either in form or substance—if indeed it does not promise to even excel it. The outline indicates a future weight and massiveness, and an elegance of form, which leaves little, if anything, to be desired, and of the two animals at the same price, many persons would prefer the former. "Lord Lamech" is of the "Lady" family. His sire, "Knight of the Shire" (E. H. B., 26,552) by "Killerley Monk" (20,053), by "Dr. McHale" (15,887), by "Baron Warlaby" (7,813). On the female side he is from "Sylph," by "Sir Walter." Mr. Torr has long been known as a most skillful and successful breeder, and his herd has gained an enviable reputation. Mr. Pickrell also brought to Illinois with him from this sale a five-year old cow, "Germania," for $2,300, and a yearling heifer, "Waterloo Shield," for about $2,500. Although Mr. Pickrell's herd was already one of the best in the country, this reinforcement to it will make it still more valuable.



A PURE BRED SUFFOLK BOAR.

Among the Farmers.—No. 1.

BY ONE OF THEM.

Farmers, I believe, always like to read about other farmers and their ways, at least I do; and next to the fun of commenting yourself upon the way your neighbor does his work, is the fun of having somebody else comment on it. I spent a few weeks last fall among some pleasant farmer folks a good distance from here, and their mode of life—their *walks* and *ways*, actually as well as figuratively are so different from ours, as well as, upon the whole, so good and thorough, that I am inclined to make them better known.

Customs that come down from a remote antiquity, whilst almost everything has changed, ought to have some good in them. Variations in long-established habits are not made without some real or fancied advantage. I will not say but that our ways are a great deal better than those of European farmers, but that when we criticise their systems fairly, we must take into account their surroundings—their customs, markets, roads, expenses, etc., as well as soil and climate.

It was mostly among the farmers of the Channel Islands that my time was spent; and since my return I have been surprised to learn from conversation with neighbors and friends—many of whom would be shocked to have it suggested that they were even "rusty" as regards their geography—how few people know what and where the Channel Islands are. So it is worth while briefly to say, that on the northwestern coast of France, between the cities of Brest on the west and Cherbourg on the north, there is a deep jog like a little bay of Biscay, so to speak. In this bay there is a group of small islands which own allegiance to the Queen of Great Britain, and are sheltered under the wing of the British government. The two larger ones are each about as big as Staten Island. These are Jersey, the largest of the group, and Guernsey. Alderney is very much smaller, and Sark smaller yet. They are in plain sight of the French coast, and of one another. The people speak French as their mother tongue, but all that one is brought in contact with speak English well also. The islands are famous for their healthful, mild climate, as a resort for invalids and for quiet pleasure-seekers, being neither warm nor cold the year round; for their excellent granite, for their early potatoes and fruits, and for the breeds of butter-producing cows which have originated upon them. Those of Alderney first became famous in England, and gave their name to the Channel cattle. This was unfortunate, especially as the breeds of Guernsey and Jersey are quite distinct in their characteristics, as is now well known.

Channel Island Farming.

Imagine what a change it would make in our farming if we could be set down in a country where the buildings are all of stone; farm-yard fences 8 or 10-foot walls laid in cement; the roads, so hard, and of such easy grades, that fully double the loads can be drawn upon them that it would be safe to draw in this country; the principal fences of the farm, living ones, growing upon ridges or earth-walls, and needing only a little dressing and repairing occasionally, to turn cattle for a hundred years to come. This condition of things really exists there, and though, at first thought, one might say it has little to do with farming, yet it is not so.

We complain of high taxes—at least, we suffer from them. Yet, do not we tax ourselves more than we are taxed, twice over, by building unsubstantially, by submitting to have poor roads, and by making fences which can last, at most, only a few years? I saw buildings known to have stood since the 11th century—built, to be within bounds, four hundred years before America was discovered. If a house is built to stand, and well built, it will last a good while, and children's children for generations may play under its eaves. People did not even know how long a *thatched* roof would last.—Clearly, the thatching of one generation was a good roof for the next. Tile-roofs were regarded as much better, however, and the old straw roofs are gradually being replaced by tile and slate. Thus the landscape is likely to lose a very picturesque feature, but the change will be so gradual that another generation or two will still be familiar with the mossy thatched roofs, which look like such warm brooding shelters to happy households, or to snugly stabled kine.

Stone Sties and Byres.

Where stone abounds, and is easily gotten out and wrought in useful shapes, I found it always extensively employed for building purposes, in ways too which seem strange to us. Stone for houses, and barns, and stables, strikes us as quite the thing—very good, but expensive—but when it comes to stone pig-sties, I think most farmers would shake their heads and say, that this was carrying thoroughness and durability too far for profit. Yet look at it. I saw a great many sties, in which there was not a particle of wood, except for a single outside door. Usually, small feeding-rooms exposed to the weather were upon one side, and yards into which litter was thrown to be worked over were upon the other, with the sheltered sleeping quarters between. In the walls, which formed the front of the feeding-rooms, stone troughs were placed just above the stone floor of the pen. These were, of course, accessible to the pigs from the inside, and conveniently so to the farm hands from without, both for pouring in the feed and for cleaning and washing them out. In some cases the entire length of the trough was accessible from outside the pen; in others, a stone shute was made through which to pour the feed. Pigs so penned have nothing to gnaw, and they cannot get to the ground to root, for the whole floor is flagged. Those parts of the pen which it is desirable to keep clean—namely, the feeding and sleeping-rooms—may be swept and washed out as easily as any floored apartments. In such a structure, durability, security against damage from fire, from decay, from vermin, and from disease to its inmates, are secured. In the matter of freedom from *rats* alone there is almost incalculable advantage—for consider the fact, that trichina and measles (tape-worm), parasites with which pigs are frequently afflicted, are disseminated by rats greatly more than by any other cause.

The cow-stables, or byres, are usually made with most of the inside work of stone also—giving great durability and freedom from allurements to vermin. We might easily introduce the stone or cement feeding-troughs—as for the stone floors they are another matter—very good, under many circumstanees, but not better than oak ones for our purposes—especially with barn cellars. The feeding-troughs vary in shape and in construction. I noticed those that were each cut out of one piece, others consisting of slabs of stone set in cement, and others still made altogether of cement. Where stone can be conveniently got in slabs ten to eighteen inches wide and two or three inches thick, feeding mangers for cows may easily be made by bedding the edges of these in a mass of cement laid upon a grouting of broken stones; the slabs being kept from falling apart by long bolts or clamps of iron, and the partitions being of pieces cut in the proper form.

Cleanliness.

In these byres, and about the farm buildings generally, among well-to-do farmers, cleanliness for its own sake, is the rule, though there are, as with us, exceptions. They husband manure more carefully than we do, and the loss of the liquid parts is rarely seen. One reason for this is doubtless the close proximity of the barns to the dwellings. In many cases the farmer's dwelling forms one side of a quadrangle, the cow byres and dairy rooms a second side, the barn the third, and a high wall with arched gateway, the fourth side against the road. While on the subject of cleanliness, let me allude to the cleanly way of milking that prevails in the Channel Islands.

The Way of Milking.

Though I believe the Jersey milking-can has often been described, yet, before going there, I had never known how it is used. The can is of tin, globular, with a flat bottom and a rim around it. The upper part of the globe is open, and has a flaring top, which is about 8 inches in diameter at the edge. A handle, like a pitcher handle, is upon one side, attached to this flaring top. When in use, a rather closely woven linen napkin is tied over the top, and under the handle, so that it will sag down into the can to a depth of three inches or so. In this sag of the strainer a seashell is laid—one of the shells of a scallop being usually employed. The streams of milk strike into the shell, and the foam soon rises and nearly fills the strainer; specks of falling dirt mostly rest upon the top of the foam. Those which are carried down, wash over the edge of the shell, and lie beneath it. There is no spattering, and the milk is obtained entirely free from hairs and specks of dirt, while soluble dirt, which sometimes falls in, comes as little as possible in contact with the milk.

Roads.

I was curious to learn by what system the public roads were kept in such excellent repair, and found that it was by a very simple rule—one which, with a little trouble, any community, except one upon the prairies, or similar stoneless region, may adopt. That rule is to keep all soft ground and vegetable growth off the road-bed, and to fill all depressions or spots where water will stand at all, with finely broken stone—the hardest that can be obtained. The stone-breaking is done by hand, with light, long-handled hammers, and either contracted for, or in some places used as good employment for criminals, or for charity labor. This last is a kind of labor which we do not employ as we might in this country. Poor folks, with us, are left alone, or fed by their neighbors, until they are fairly "upon the town"; then they are sent to the poor-house, and their children bound out. If some such work as stone-breaking were provided, at which barely enough to provide food could be earned, people out of work in the winter, or at any time, would be glad to do it. Where this work is done by charity labor, I noticed it was altogether job-work. Boxes, without tops or bottoms, are provided of uniform size, being about 4 feet long, 18 inches high, and 2 feet wide. When full of broken stone, the inspector can lift one end or the other a little, and get out a shovelful almost anywhere, and when he "passes" it, the box is lifted off, the stones falling off on all sides on a regular slope. The prism-shaped heap is then thoroughly sprinkled with whitewash, so that no lazy fellow can steal any of the stones to fill his own box, and also to prevent adjoining proprietors from purloining them to dress their private ways with.

In Jersey they have been recently—I don't know how recently, but within the memory of man—making some fine, broad roads, in which the principles of McAdam and of Telford have been followed to a greater or less extent, as occasion demanded. These roads are therefore known to have, at least in soft ground, a foundation of large stones, properly laid upon a drained bed; these topped with coarsely broken ones, and these with small ones; but how the most ancient roads were made, it is hard to tell at this day. There are no zero nights there, and no upheavals consequent upon frosts coming out of the ground from a depth of three or four feet. Where such freezing occurs, especially on clayey land, there is no absolutely good road possible, unless the land is drained thoroughly, and a stone roadway built upon that, as above described.

In bowling along upon the perfect roads of Europe, I have often thought over the changes such a state of things would produce here. How many wagon-makers and wheelwrights would it throw out of employment? How much money would be saved to the farmers' pockets? What would be the effect on all concerned, if one horse could do the work on the road that we need two for now? Would it not almost pay in two or three years for having the roads put in such order?—Such an operation takes time, and the thing to do, is for communities to work into it by degrees, making the cost so small at any one time as not to be observed.

High Rents Paid for Land.

When high rents are paid for farm land, and but little larger crops are raised, and but little higher

prices are obtained for produce, than we can get here, the reasons why farmers can afford to work in this way, must be sought in something besides their modes of culture, and the cheapness of human labor. Good farming land, well located, and naturally rich, rents in some parts of Jersey for £8 to £10—say $40 to $50 gold—per acre. Of course, much farming land rents at decidedly lower rates, but what would American farmers think of paying such a rent for land, and laying it down to grass at that, sometimes? I saw enough of European farming to make up my mind that it will be time enough for us to laugh at their clumsy implements, and at their slow and "old fogy" ways of doing things, when we can point to better results.

Building Fences of Prairie Sod.

However much we may desire to avoid the use of fences, and by herd-laws and other means strive to avoid their cost and maintenance, we must as yet regard them as a necessity. Fences no doubt cost money, time, and labor, but so do houses, barns, and stables, and yet we consider these as indispensable to the management of a farm, and are always discussing the best methods of building and arranging them. All our discussion leads at last to the conclusion that at least the boundary of every farm must be protected by fences of some kind. Inner fences may well be abolished, except for pastures, but there must be some barrier around each farm, at least to mark the boundary, if not to prevent trespass. It is not reasonable to expect others to look after the safety of our property. The first duty of a man is to care for his own, and, as far as regards his fields and his stock, he can do this more easily by means of fences, than in any other manner. There is much to be said as to the kinds of fences that are likely to be the most economical, permanent, and useful. On account of the abundance of timber in many localities, we have been lavish, not only of fences, but of fence material, and the costly rail fence, now that timber is becoming scarce, can no longer be easily maintained. In some newly settled parts of the country, where there is no timber, wooden fences are simply out of the question, and an immediate substitute must be found. A temporary expedient to avoid the building of fences has been found in the enacting of herd-laws, which compel every owner of stock to look after his animals, and restrain them. But the time will come, when this can no longer be done, and there will always remain the difficulty arising from a lack of fences on the highways, and the resulting but unavoidable tresspass and damage. This must be provided for, and an easy means of enclosing the farm is very desirable. We have long considered that a fence of the tough prairie-sod, built in a cheap manner, might be made to answer a temporary purpose at least, until a living fence or hedge could be grown, and boundary plantations made for shelter and protection. The difficulty in this lies chiefly in the cutting of the sod into proper lengths, that may be quickly and smoothly built into a wall. We find an excellent suggestion to meet this difficulty in a book recently published, and already noticed in the *American Agriculturist*, entitled "Nebraska, its Resources, Advantages, and Drawbacks," by Mr. E. A. Curley. In reference to fences in a prairie country, Mr. Curley considers the sod fence as the best temporary resource, until hedges may be planted and reared. He suggests a method of cutting the sod, by means of a machine, easily made from materials always at hand on prairie farms, which we illustrate. Figure 1 is a frame, similar to a sled, mounted upon side-runners, and fitted with a tongue. To this frame an inner one is fixed upon pivots, so that it may be lifted, when necessary, out of contact with the ground. When at rest, this inner frame rests upon the cross-bars of the principal frame or sled. The inner frame has an axle, upon which four wheel-coulters of ordinary breaking-plows are mounted. These are placed three feet apart, and are so arranged that they cut the sod three or four inches deep. The pressure sufficient to force the coulters through the sod is gained by the weight of the driver, who stands upon the step, shown in the illustration, at the rear of the machine. A guard is made in front of the step, to protect the driver, in case of an accident or sudden stoppage, and prevent him from falling upon the coulters. This machine is driven across the line of the fence-row, at a distance of about 12 feet upon each side of the center of the fence, thus cutting the sod in strips 3 feet wide and 24 feet long. To make the turning easy, handles are provided, by which the cutter-frame may be lifted from the ground. When the row has thus been all cut into strips, the breaking-plow is run up on one side of the center of the intended fence, and a sod 15 inches wide thrown over flat, exactly upon the center. The plow is then run down so as to throw a second sod upon the first, as shown in the center of figure 2. Then the plow is run up and down, so as to cut the sod into strips from 15 to 12 inches wide, gradually decreasing the width as the outer edge of the strip is reached. This is shown in figure 2. These strips of sod are 3 feet long, having been cut into this length by the previous operation. These are readily thrown by hay forks, or dung forks, on to the fence line, where they may be rapidly piled up into a wall, as seen at figure 3. This should be done evenly and well, laying the sods so as to break joints. As these fences are apt to be heaved with the frost, or distorted by frequent freezing and thawing, upon the south side of those that run east and west, it will be well to run a few furrows, throwing a bank of earth against the fence, and leaving a shallow ditch upon each side. This, as indicated by the dotted lines in figure 3, leaves a strip of mellow soil in which plants for a hedge may be set, upon the outside of the fence, and a row of trees for shelter may be planted upon the inside. By the time the hedge is fully grown, the bank may be allowed to fall into decay, or being of no further use, it may be leveled. A more substantial fence is shown in figure 4. This is made in a similar manner, except that the sods are built up in two walls, the space between being filled with earth from the ditches seen upon each side. In building this fence, sods are placed crosswise here and there, to keep the outer walls from spreading, and the top is capped with sods. This fence is calculated for a farm in a low or moist situation, where drainage is needed, or for a stock-farm. The ditch is a perfect protection for the fence against horned animals, which would otherwise damage it by tearing it with their horns; a favorite pastime with the untamed Texan steer, as well as with some more civilized cattle.

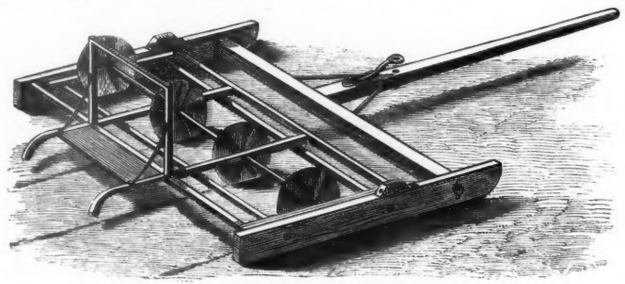


Fig. 1.—MACHINE FOR CUTTING SODS.

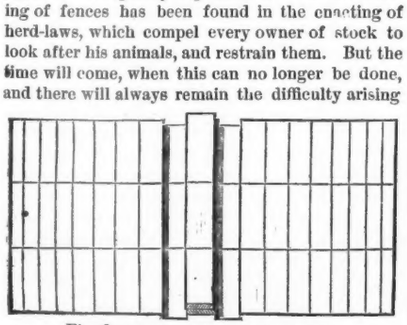


Fig. 2.—THE SODS CUT IN STRIPS.

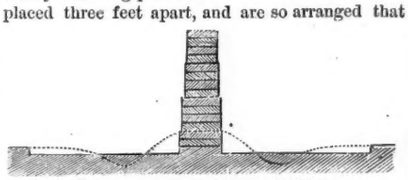


Fig. 3.—SECTION OF SOD FENCE.

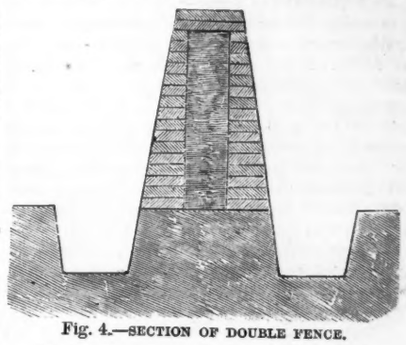


Fig. 4.—SECTION OF DOUBLE FENCE.

The growth of hedges so far, has been very unsatisfactory. The osage orange, which is the best and most available plant, nor in fact any other, will thrive under neglect. Five years is ample time in which to grow an impassable hedge, if it is well managed. It is reasonable to suppose that there would be a sufficient demand for the services of a capable hedge-grower in every county, who would grow hedges by contract for a fixed sum, and care for them annually. Hedges must have at least yearly attention, and some require it twice yearly, or they will soon fail. Professional hedgers ought to be in demand, and until they are, there will be no proper hedges, or at least very few of them. A farmer had better pay a competent man to look after his hedge, than to let it go to ruin for want of the care that he will rarely give it himself, even should he know how to do this. The miserable failures one sees on every hand, go to prove that farmers do not know how, or will not take the trouble, to care properly for their hedges after they are planted. As the hedge question must inevitably soon become a serious one for farmers everywhere, but especially in the west, it would be a wise thing for young men to make the rearing and care of hedges a study and a business, and it might be a good thing that this study be made a special branch in Agricultural Colleges. Meanwhile this sod fence will not only be a good protection for the farm until a hedge can be grown, but it will furnish needed shelter, both for it and for a plantation of young trees, and will also furnish a strip of mellow ground upon which they may be planted. As this strip must be broken and plowed before a hedge can be planted, this necessary labor will go to reduce the actual cost of the fence, which is less than 30 cents a rod.

Building Stone Walls.

An easy method of lifting large stones, when building walls or fences, is here illustrated. This is now a seasonable work, and much may be done at this time of the year when farm work is not pressing. If any walls are to be laid, the work should not be delayed, as the spring is now rapidly approaching, when labor of more immediate importance must be undertaken. With this method

TRUCK FOR HANDLING STONE.

of handling, one man can raise very large stones. A strong plank, or a frame made of two planks, fastened together side by side, is laid against the wall, resting at the upper end upon loose posts properly placed, or some other sufficient support. A deep groove is cut in the upper end of the plank or frame. A low frame or carriage of planks, mounted upon rollers or small iron wheels, is provided, and a pair of strong handles are fixed to the front, as seen in the engraving. The stone is rolled up on to the carriage, which is pushed up the plank or frame until the forward roller or wheels drop into the groove. It there remains, while by means of the handles the carriage is tipped and the stone turned on to the place where it is wanted. By previously preparing its bed, the stone may in many cases be dropped, so as to need but very little change of position.

A Crupper-Pad for Horses.

A correspondent asks for a method by which he can prevent a horse from carrying its tail upon one side, and also prevent it from clasping the reins beneath the tail. He suggests "nicking" the tail.

CRUPPER-PAD.

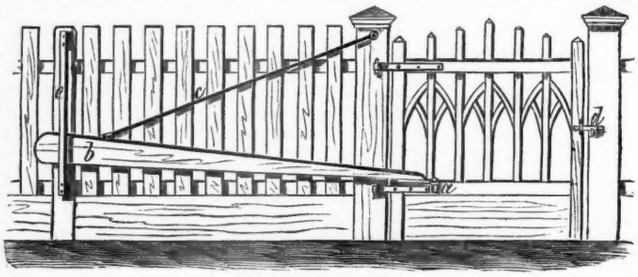
We can not advise the operation of "nicking," which consists in cutting the skin and muscles upon one side of the tail, and tieing it over to the cut side, until the cuts heal, when the skin, being drawn together, pulls the tail permanently over to that side. A different form of the operation causes the tail to be carried up in a style that is supposed to be more graceful, and prevents the horse from clasping the reins when driven. As a preventive of both of these habits, the pad shown in the accompanying illustration is often used by horsemen, instead of the cruel and unnecessary operation of "nicking." This appliance is made of leather, is stuffed with hair or wool, and is about three inches in diameter at the thickest part, gradually tapering toward each end, where it is fastened to the crupper-straps. It should be drawn up close to the roots of the tail, and by exerting a pressure beneath it, the tail is carried in a raised position, and is not thrown over to one side. If it is, a few sharp tacks may be driven into the inside of the pad.

The Management of Young Bulls.

"A Young Breeder" wants a method of disciplining his bulls so that they may be made more docile and manageable. To do this it would be advisable to work them occasionally in a one-horse tread-power. They should be used to this when young, and thus being made amenable to restraint, there will be no "breaking" needed afterwards, and consequently no trouble. We have used a Jersey bull in a tread-power in which he worked with more steadiness than a horse, and twice a week he served a very useful purpose in cutting the fodder for the stock. Nothing more was needed than to lead him by a rope from the nose-ring into the tread-power, and tie him short so that he could not get too far forward. He was very quiet, not at all mischievous, and was a very sure stock bull; and besides this, the value of his work was at least equal to the cost of his keep. Where there is no tread-power, a substitute may be found in the arrangement here illustrated. Set a post in the barn-yard, bore a hole in the top, and drive a two-inch iron pin into the hole. Take the wheel of a wagon that has an iron axle, and set it upon the top of the post so that it will turn on the pin as on an axle. Fasten a strong pole (such as a binding pole for a hay wagon) by one end to the wheel, and bore two holes in the other end, large enough to take the arms of an ox-bow in them. Fix a light-elastic rod to the wheel, so that the end will be in advance of the end of the larger pole. Yoke the bull to the pole, and tie the nose-ring to the end of the elastic rod, in such a way that a slight pull is exerted upon the ring. Then lead the bull around a few times until he gets used to it; he will then travel in the ring alone until he is tired, when he will stop. Two hours of this exercise a day, will keep a bull in good temper, good condition, and excellent health.

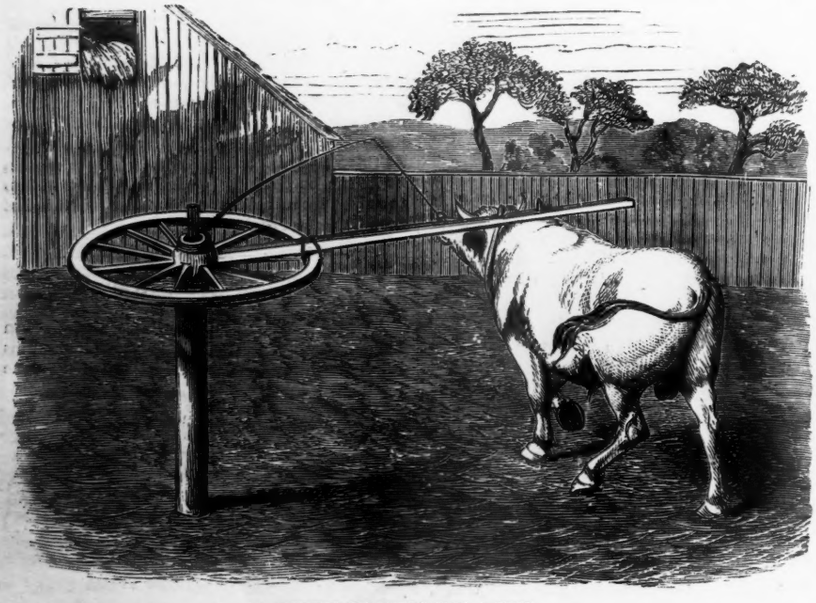
A Self-Acting Device for Shutting Gates.

The following description, accompanied by a very neat drawing of a self-acting gate-closer, has been sent to us by F. Friedrich, a subscriber in Wisconsin. The device is not patented, but is freely given to the public by our correspondent.



SELF-SHUTTING GATE.

We consider this more valuable than many of the patented appliances for gates, and expect it will be widely used. Lest any difficulty should hereafter occur through any patent-right claims that may be presented for any gate made upon this plan, it would be safe to keep a copy of the present number of the *American Agriculturist* with this illustration for future reference. The gate may be of any kind that is hung upon hinges. The device may be applied to single or double gates, and to light or heavy ones, by simply changing the weight of the shutting-bar. The shutting-bar (*b*) is 5 to 8 feet long, one inch thick, and should be made in the form shown in the engraving, so that the weight will be mostly at the farther end from the gate. The bar is fastened to the gate by a half-hinge (*a*), which should project from the gate two to four inches; the heavier the gate, the farther the hinge should project from it, so as to make the weight of the bar more effective when the gate is nearly closed. To the lower end there is screwed an iron bolt, in which is a slot two inches long, which gives room for play upon the half-hinge. The bar is fastened to the gate-post by a chain or rope (*c*), which may be lengthened or shortened at pleasure. A guiding bar (*e*) is fixed to the fence so as to have play-room of two to three inches, in which the shutting-bar may work up and down freely. The mode of operation is as follows: When the gate is opened, the hinge, which is several inches from the heel-post of the gate, pushes the shutting-bar backwards. As it is held by the cord or chain, it cannot go backwards, but is forced to rise in the space between the guide bar and the fence. The hight to which it rises is regulated by the length of the cord or chain. When the gate is released, the weight of the shutting-bar operates at once, and as it is held by the cord, it must push upon the gate so as to close it. A self-operating latch (*d*) should be used, so as to fasten the gate when it is closed. This device can be used for doors as well as gates, and will be most useful for those people who are afflicted by visitors who have that very common but very annoying habit of leaving gates and doors open as they pass through them.



MANNER OF EXERCISING A BULL.

Fish Scrap as Food for Sheep.

Some of the Maine farmers have been in the habit of feeding "porgy chum," or the scrap left from the manufacture of fish-oil to their sheep, and extravagant statements have been made as to its value for that purpose. As a test, Prof. Farrington, of the Maine State Agricultural College, divided a flock of ten lambs, and fed half of them with hay and what scrap they would eat, and the other half with hay and a quantity of corn equal in weight to the scrap eaten. The five corn-fed lambs gained 48 lbs. in weight in four months, and the five fed upon scrap gained 47½ lbs. in the same time. The quantity of scrap eaten was only one pound per week for each sheep. It is concluded, therefore, that the fish scrap is equal to corn for feed. The analysis of the dried fish, freed from moisture, as determined by Prof. Geo. H. Cook, of New Jersey, is as follows: in 100 parts there are of organic matter 78.30, (this is said by Prof. S. W. Johnson, to contain 7 to 8 per cent of nitrogen, lime 8.67, phosphoric acid 7.78, silicic acid 1.33, potash 1.54, soda 1.02, magnesia 0.67, and chlorine 0.69). This analysis shows it to be of considerable value as food for some of our farm animals which may be in-

clined to eat it. The experiment, however, is not fair as regards corn, on account of the small quantity consumed. Had an equal number of animals been fed all the corn they could have profitably consumed, there is little doubt but that would have been found the more valuable food. It is shown that fish scrap will be eaten by sheep in small quantities, and that to that extent it may be utilized as feed, but if only one pound per week is consumed, it is evidently not a desirable food.

To Fix or to Lift a Gate-Post.

A plan of setting a post for a gate or fence firmly in the ground is illustrated at figure 1. When the post-hole is dug, a flat stone is laid in the bottom, against the side upon which the strain upon the post causes it to press. The stone receives the pressure, and having a larger surface than the post, is not so apt to work into the earth at times when it may be wet and soft. When the post has been placed, and the post-hole nearly filled with earth, another stone is laid against it upon the side towards which it is drawn by the weight of the gate or fence. The use of the stones distributes the pressure over a greater space, and there is much less tendency for the post to work loose.

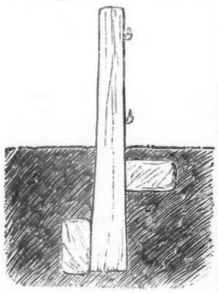


Fig. 1.—FIXING A POST.

When a post is to be moved, it may be readily drawn out of the earth by fastening a chain or rope around the bottom of it, and carrying it over a stake or a piece of plank, if nothing better is to be procured, as shown in figure 2, and then hitching the team to it. A large portion of the force of the team is changed in its direction to an upward one, and this is generally sufficient to lift the post. Small stumps, or partly decayed large ones, may be lifted out of the ground in the same manner.

Fig. 2.—LIFTING A POST.

Hints for the Workshop.

A grindstone is very seldom kept in good working order; generally it is "out of true," as it is

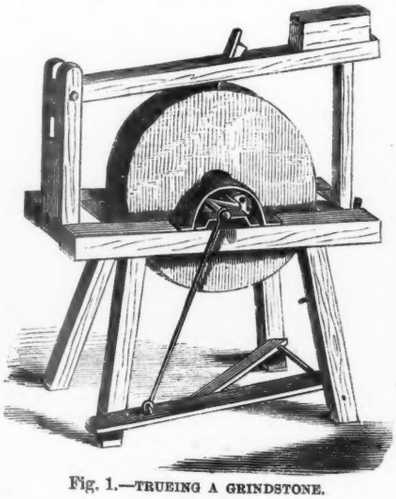


Fig. 1.—TRUEING A GRINDSTONE.

called, or worn out of a perfectly circular shape. A new stone is frequently hung so that it does not run "true," and the longer it is used, the worse it becomes. When this is the case, it may be brought into a circular shape by turning it down with a worn-out mill-file. It is very difficult to do this perfectly by hand, but it is easily done by the use of the contrivance shown in figure 1. A post, slotted at the upper part, is bolted to the frame. A piece of hard wood, long enough to reach over the frame, is pivoted in the slot. This should be made two inches wider than the stone, and be pivoted, so that an opening can be made in the middle of it, of the same width as the stone. This opening is made with sloping ends, so that a broad mill-file may be wedged into it in the same manner as a plane-iron is set in a plane. At the opposite end of the frame a second post is bolted to it. A long

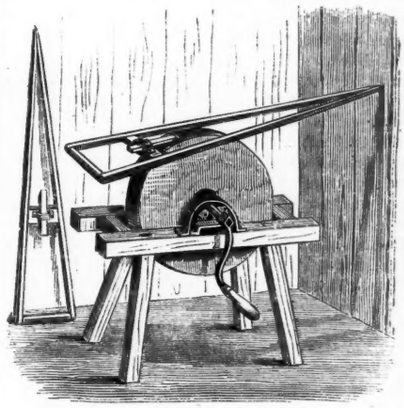


Fig. 2.—HOLDER FOR TOOLS.

slot, or a series of holes is made in the lower part of this post, so that it may be raised or lowered at pleasure by sliding it up or down upon the bolt. If a slot is made, a washer is used with the bolt; this will make it easy to set the post at any desired hight. It should be placed so that the upper piece of wood may rest upon it, exactly in the same position in which the file will be brought into contact with the stone. A weight is laid upon the upper piece to keep it down, and hold the cutter upon the stone. When the stone is turned around slowly, the uneven parts are cut away, while those which do not project beyond the proper line of the circumference, are not touched.

MILL PICKS and COLD CHISELS may be held by this contrivance while being ground. In grist-mills, where a number of picks need grinding very frequently, an extra hand is often required to hold them, and much time is unnecessarily lost. By wedging them in the upper piece in the manner described, and raising the post to the proper hight, any boy, however inexperienced he may be, will be able to grind them properly. In the same way cold chisels may be ground. Mill picks and cold chisels should be ground to an exact angle suited for the work required of them, which may be readily done by placing them in the proper position by suitable wedges, and the position will not be changed during the grinding — a very important matter.

A GRINDING FRAME to hold tools, is described by a correspondent, and engraved in figure 2. It is made of light pieces of pine, or hard wood, in the shape shown. The tool to be ground is fastened to the cross piece. A sharp point, a nail, or a screw, is fastened to the narrow end of the frame, and when in use, the point is stuck into the wall of the shed, which forms a rest.

A Safe Barn Lantern.

Several readers, referring to our recent caution against using kerosene oil in the barns and stables, have asked for a description of a safe lantern to use in their out-buildings. An engraving is here given of the lantern we have been in the habit of using in the barn and stables, which is perfectly safe and more convenient than an oil lantern. The frame is made of tin; the back is wholly of tin, and the front and sides are of glass or sheets of mica, which slide in grooves in the corner posts of the frame. The bottom is pierced with holes to admit air, and the top is covered with a cap, which prevents the wind from blowing down into the lantern, but which permits the heated air and smoke to escape. A handle in the shape of a hook is fixed to the back, by which it may be hung up in a proper place upon a staple or a screw-eye fastened in the wall or to a post. A common tallow candle is perhaps the best light, and a dish made to go easily into the lantern, and leave a small space around each edge for the circulation of air, as shown in the illustration, will be found very convenient and cleanly in use. No spark can possibly drop from the wick and fall out of this lantern. A small oil lamp may be used in place of the candle, if found more convenient or desirable, but we have found so much difficulty in getting good burning oil that will not gum up and stop flowing, that the tallow candle made in the common mold was adopted as the best light in every respect. In making the candles, the wick should be divided into three equal parts, and loosely plaited into a flat, soft ribbon. In burning, this plaited wick will turn over to one side and the burned end will waste away at the side of the flame, and require no snuffing, while the common form of wick must be frequently trimmed, or it will burn very dimly. The glass or mica slides can be slipped out of the frame in an instant when necessary, either to clean the lantern or to trim it, and the tin back should be kept clean and bright, to act as a reflector.

BARN LANTERN.

An Ohio Barn.

Mr. Henry Kyle, of Green Co., Ohio, sends the following description of his new barn, which he thinks has many conveniences. The total cost was

Fig. 1.—PERSPECTIVE VIEW OF MR. KYLE'S BARN.

$1,200, in addition to the owner's work, and the value of the frame timber, which was cut upon the farm. From the sketches sent by Mr. Kyle, the accompanying engravings have been prepared,

which will help to make the description clearly understood. The basement is 60 feet long and 24 feet wide, and 7 feet high in the clear; the walls containing 70 perches of stone-work. The floor

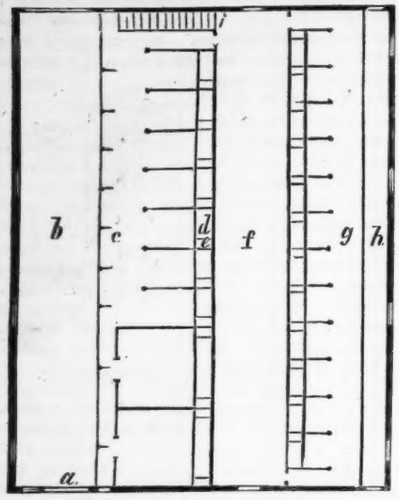


Fig. 2.—PLAN OF STABLE FLOOR.

above is supported by two rows of pillars, the outside row, seen in the engraving, are 2 feet by 6, the inside ones are 2 feet square. The barn is 48 feet wide. The floor of the cow-stable (fig. 2), which is over the basement, rests upon joists which are laid upon cross-sills, which reach from the ends of

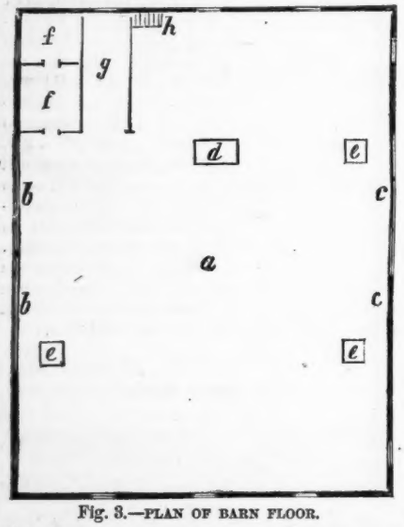


Fig. 3.—PLAN OF BARN FLOOR.

the front pillars to the rear ones. The joists rest upon the cross-sills as far as the latter reach, and then upon the pillars. The cross-sills are 10 inches square. There is thus a drop of 10 inches in the floor upon which the cows stand and immediately behind them. This drop (*h*, fig. 2) is four feet wide, and forms a passage in which the manure collects, and from which it may be pushed through the side of the drop into the basement below. The liquids from the cows drain through this open space

Fig. 4.—HORSE-STALL.

on to the manure in the basement. The floor upon which the cows stand (seen at *g*) is 6 feet wide. In front of the basement there is a fenced yard in which is a permanent spring. Here the cattle run for exercise; a passage-way, seen above the arches in the engraving, leading from the stable-door to the yard. There are fourteen stalls for cows, (*g*, fig. 2), each of which is four feet wide. The partitions between the stalls are formed in the manner shown in fig. 5. In each stall is a manger and a feed-box. The cows are tied with rope-halters around their necks. There is a passage (*f*) between the cow's-stable and the horse-stable (*c*). In the horse-stable there are seven single horse-stalls, and two closed loose boxes. Each single stall is five feet wide. When the horse-stable is cleaned, a wagon is driven into the shed behind it (*b*), the manure is thrown into the wagon, and at once hauled away wherever it may be wanted. The floor of the horse-stable is on the ground. The partitions between the horse-stalls are made as shown in fig. 4. At fig. 6 is shown the crane upon which to hang harness, one being fixed in the wall behind each horse. The post of the crane is made of 3×4 scantling; the ends are rounded and swing in large staples. The arm is made of 1×6 stuff, and is 3 feet long. The shed (*b*) is used for storing tools and wagons, or for housing sheep, and has a door (*a*) at each end. One door opens into a yard, through which the road, seen in the engraving, runs. Here the straw and corn-stalks are stacked, and a great portion of them are here fed to the stock to make manure. No water from the barn runs into this yard, or on to the manure. The stables are 8 feet high, and the barn above the stables is 18 feet high. The plan of the barn floor is shown at fig. 3; at *a* is the main floor; at *b*, *b*, are the entrance doors, to which a sloping driveway, abutting against the wagon-shed, leads. The rear doors (*c*, *c*) are hung upon rollers, and in fig. 1 are seen partly open. At *d* is the trap for hay, leading to the feed-passage below, and *e*, *e*, are traps for straw used for bedding, leading into the stables. The granaries are seen at *f*, *f*, and there are spouts from these leading into the wagon-shed, so that sacks upon the wagon can be filled from the spouts. The passage to the granaries is at *g*; it is 8 feet wide, and a work-bench and tools are kept here. The staircase leading down to the feed-passage is seen at *h*, and also at *i*, fig. 2. The trap-doors are on hinges and are double. The floor is also double, so that no dust can fall through to the floor below, nor any disagreeable vapors arise therefrom. This story is 18 feet clear, the roof being a truss-roof and self-supporting. The roof is shingled with pine shingles, and the whole of the barn is covered with pine weather-boarding, and painted. Mr. Kyle is kind enough to say that he got the ideas for this barn and the manure cellar from the *American Agriculturist*, in the frequent discussions about these matters, although in carrying them out, his plan is wholly his own. After having used the barn, he thinks the arrangements are the best he has seen. There are certainly many excellent points about it, and this description will be of great service to many who are thinking of building barns.

Fig. 5.—COW STALL.

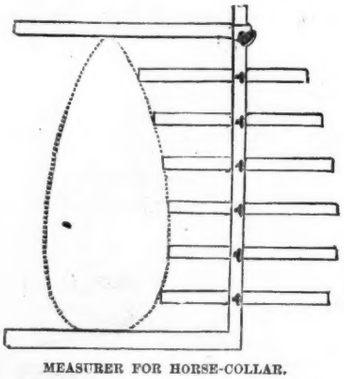
Fig. 6.—HARNESS CRANE.

The Use of Oil-Cakes.

The yearly production of flax-seed in the United States, is about 120 million pounds, or two million bushels. This is almost wholly used for the manufacture of oil. The refuse cake, or oil-cake, left after the oil is expressed from this quantity of seed, amounts to about 80 million pounds, or 40,000 tons. This is nearly all exported, a small part only being used here. The feeding value of this quantity of oil-cake represents about 16 million pounds of beef and mutton, and a large quantity of wool and hides. The loss to the country, through the export of this quantity of a most valuable feeding material, is equal to the profit which would result from the making all this meat, wool, and hides. If the profit upon every pound of meat so made, should be 5 cents, the amount would reach a value of $800,000. In addition to this, there is lost the value of the manure that would be made from feeding 40,000 tons of oil-cake. This is estimated by Mr. Lawes at about $25 per ton of oil-cake. The value of this would be a million dollars, and the total amount of the loss we sustain by shipping away the linseed oil-cake we produce, may be stated at $1,800,000 every year. Through our own want of enterprise, we allow our competitors abroad to make this handsome sum of money every year, out of the materials we furnish to them, and which we might and should use ourselves. But this is not all. The English people are our customers for wheat, corn, pork, beef, butter, and cheese. This they cannot avoid. And the quantity of these necessaries of life we sell to them, depends in a great measure upon the amount of each they are able to produce. The less they produce the more we shall sell to them. The English market for beeves greatly needs a supply from us, but we have not the cattle to spare. In fact we are really helping our competitors to increase their products, and at the same time reduce our own, thus actually, to a considerable extent, destroying our market for what we do produce. This is one of many reasons why our agriculture is not so prosperous or as profitable as it might be, and one of the unbusiness-like ways in which we as a people carry on our farming. But the loss here pointed out, is a very insignificant one compared with that resulting from our method of using cotton-seed. Our yearly product of cotton-seed is about two-and-a-half million tons, or five thousand million pounds. When freed from the husk, or "decorticated," more than two-thirds of this vast quantity is left, which, as an article of food for domestic animals, is of even greater value than linseed. This is equivalent to 700 million pounds of meat, and that remaining in the shape of manure (after having fed the seed and turned it into cattle or meat) is worth fifty millions of dollars. At ten cents a pound for the meat, this product would be seventy millions of dollars, giving a total loss resulting from the want of economical management of the crop of cotton-seed, of $120,000,000 yearly. Some portion of this is saved in the rough method in which the seed is used as a fertilizer in the south, but it is quite reasonable to take this sum as the amount that southern farmers yearly permit to slip through their fingers for want of good business management. No business can stand such waste. The consequence is that southern agriculture is actually the poorest industry in existence, and southern farmers complain of poverty and debt, and vainly try to give their land away to immigrants, from whom they hope for relief. There is an old but true adage about wilful waste, which is applicable here.

Measuring for Horse-Collars.

Horse-collars are rarely made to fit the neck and shoulders of the wearers. It is too often the case



MEASURER FOR HORSE-COLLAR.

that any collar that can be readily procured, is made to serve the purpose after a fashion, and galled necks or shoulders is the usual inevitable consequence. Few farm horses are free from galls

upon the shoulders, and the top of the neck, and these troubles all result from badly fitting collars. When a new collar is needed, it should be made to order, if possible, and the horse measured for it. Every farmer should insist upon this, and every harness-maker should advise it. For accurate measuring of the shoulders and neck, the frame shown in the accompanying engraving may be used. It consists of a square, shaped like an ordinary carpenter's square, made of wood, with a sliding arm at the top, and several other sliding arms, fitting in the post of the square, which arms may be fastened in their places by set-screws. In measuring the horse, the frame is placed on the neck, where the collar should rest, and the upper sliding arm is made to touch the top of the neck, the fixed arm at the bottom resting in its proper position under the throat. The other sliding arms are then pushed forward, until they touch the neck, and are then held in place by tightening the set-screws. The frame may be laid upon a sheet of paper, and the form of the inside of the collar marked out, giving an exact mold of what the collar ought to be, as shown by the dotted lines in the engraving. This easily constructed apparatus will enable the maker to fit the collar exactly to the side of the neck, and to allow for every irregularity of shape.

Forest-tree Planting.

FIRST ARTICLE.

Much has been written upon the rapid disappearance of our forests, and the great waste of timber. Statistics have been presented to show that if the present consumption of timber of all kinds continues at its present rate, the coming generations will suffer from its scarcity, and farmers and land owners are urged to plant trees, if not for their own good, at least for that of their descendants. It has been argued that the rain-fall is essentially modified by the removal of forests, and though this is controverted, those who hold to this view, beg the present generation to plant forests, and thus prevent a large portion of the country from becoming a treeless desert, and prevent the now copious rivers from becoming mere rivulets, if they do not dry up altogether, in the summer, while they from the too rapid melting of the snows, become dangerous from sudden freshets in spring. We are told that trees absorb the dangerous carbonic acid from the atmosphere, and give off healthful oxygen, and that we must have trees if the sanitary condition of the country is to be maintained in the future. There are numerous elaborate essays, addresses, reports, and even books, urging these and other similar reasons why we should plant forest trees. All these are interesting, even if some views of the writers are not accepted, but we doubt if any or all of them will lead, at least in this country, to the planting of a single acre in forest. We say "in this country," because our land is generally held in small parcels, and by men who are all too busy in trying to meet the pressing immediate needs, to give much thought or labor to the welfare of future generations. While our farmers are in their way eminently patriotic, their patriotism does not run in the line of expending much money and work that they may leave their country with as genial a climate, as large a rainfall, as deep rivers, or with as proper an atmosphere as they found it. When these reasons why they should plant forests are presented to intelligent farmers, they will assent to them, but will do no more. There is a great deal of "human nature" among farmers as well as other people, and unless it can be shown that tree planting will be of use to them, and profitable to them in the near future, they will not undertake it. It needs no argument to convince the farmer that trees are desirable, and he does not need to be told that timber in all shapes, and fuel also are of great value, whether to use on his farm, or to turn into cash. He knows that his family, and also his stock, would be more comfortable were his house and barns protected from the sweep of cold winds, and that even his crops would be helped if the force of these were broken. He will even admit, that were he to buy the place upon which he now lives, he would pay much more for it were it well stocked with trees, than as it is now, without them, and yet he does not plant. There are sufficient reasons for this neglect of tree planting, a neglect to which there are many striking exceptions, but it will need the efforts of the various agricultural societies, all the state bounties, and the persistent advocacy of the agricultural journals for many years before tree planting will be regarded in the only light in which it will become general, that is—as a profitable and sure investment, and one which will pay as well as any other farm crop. The farmer must be convinced that, though the returns are not immediate, they are not so far in the future as is generally supposed. This is perhaps what deters persons from tree planting more than any other one thing—the idea that they must wait for half a lifetime to receive any benefit from the work—at least any pecuniary benefit. If it can be shown, upon good authority, that it does not take so very long for a plantation to begin to make returns, and that those in middle life may reasonably hope to enjoy them, and the young men can be well assured that their acres in forest are making a provision for after life, the value of which is annually increasing, no other inducements will be required to make tree planting as general as it is now neglected. In speaking of neglect, we do not mean to convey the idea that no planting is done; taken in the aggregate, area that has been set in forests during the past 10 years, would seem very wide, but compared with that which might have been planted with profit, it is exceedingly small. It is in the prairie regions, where the absence of trees is so marked, and where their want is most distinctly felt, that most of the planting has been done, and it is a common impression that it is only in such localities that forest planting is desirable or profitable. This is a great mistake, for the older states present quite as strong inducements to plant trees as the newer ones; this is eminently the case in New England, where there are so many rocky hills and pastures, and so many fields that are fit for no other crop than trees, and where the markets are close at hand. Our correspondence shows that many would gladly plant trees did they know how to go to work; they are in doubt what to plant and how, whether they shall buy trees or raise them from the seed, and numerous other practical queries which we hope to answer in future articles. In a somewhat extended tour in various parts of the country a few months ago, we had occasion to see various plantations, from the youngest, with trees a few inches high, to the oldest artificial forest in the western states, if not in the whole country; and will embody in these articles the observations made on these visits. We shall not present any arguments in favor of tree planting, except to attempt to show that it is profitable, in the several ways in which we have suggested. We have already said that, in our view of the matter, much of the omission to plant trees is the notion that

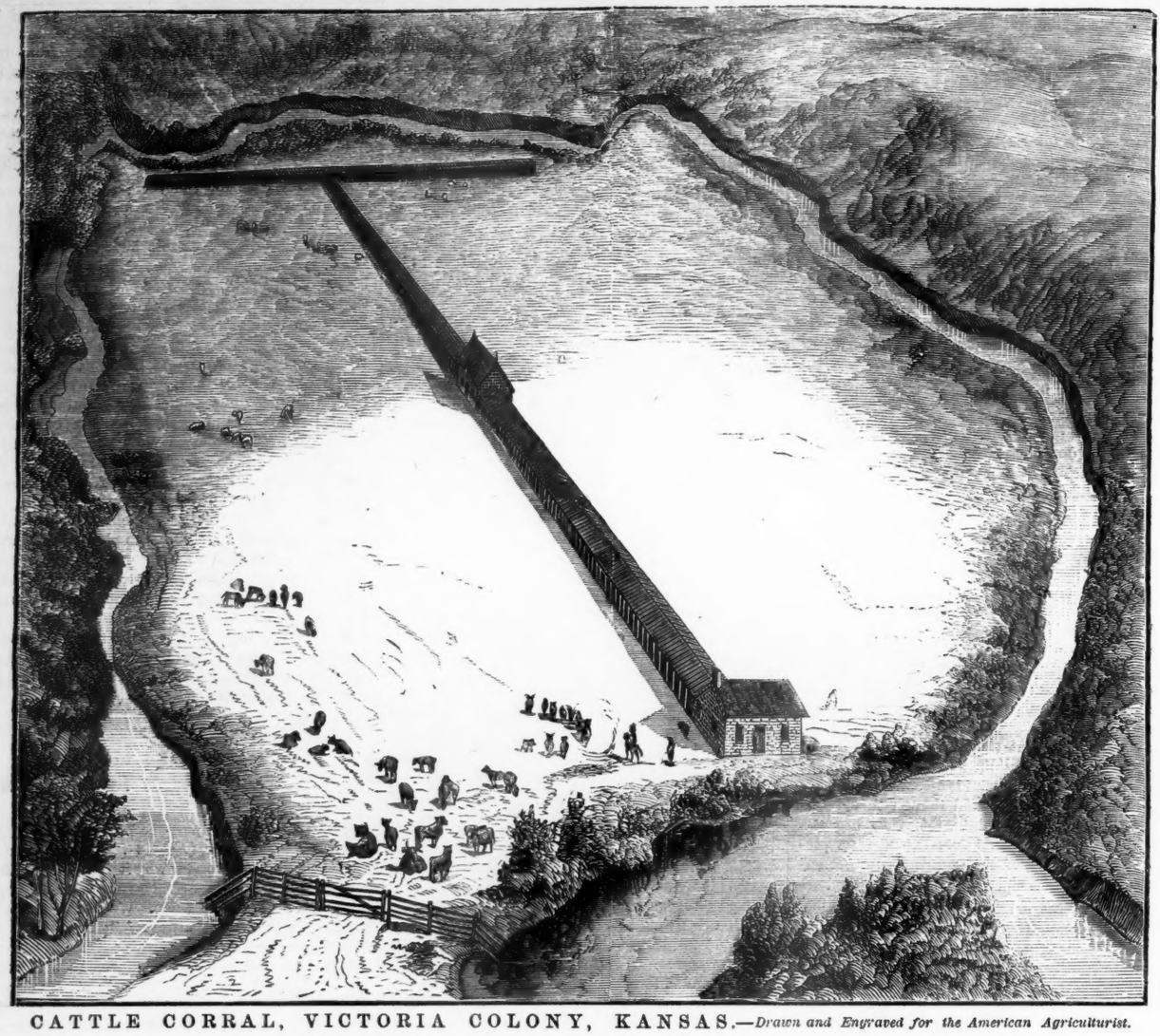
TREES ARE OF SLOW GROWTH.

Of course trees vary much in this respect, and as a general rule the more rapid the growth the poorer the timber; there are exceptions to this, and as will hereafter be shown, there are trees which make good wood rapidly; we take for the present an instance afforded by the European Larch. Several years ago, Mr. D. C. Schofield, of Elgin, Ill., sent us a statement of his experience with the European Larch. When we learned that small trees, which when set were mere whips, about 2 years old, had grown in 12 years to be 30 feet high, and 12 inches in diameter at the base, we were in doubt whether to publish it or not; all that we knew about Mr. S. was the fact that he was a member in good standing in the Illinois Horticultural Society, and it was moreover in his favor that he was a subscriber to the *American Agriculturist*. Later we saw this same statement in a report accompanied by the hint that some allowance must be made for Mr. S.'s enthusiasm; but soon Mr. S. exhibited, at one of the horticultural meetings, one of the trees, which was a sufficient answer to any one who chose to count the rings. At the meeting of the Ohio Horticultural Society, in 1871, Mr. Sherman gave an account of Mr. Schofield's method of planting an acre, which we will not now describe, except to say that the trees were planted thickly, to allow for periodical thinnings; that the income from the first thinning, at the end of seven years, would be worth $120; the proceeds from a second thinning, in another seven years, would bring in $1,000, giving in 14 years, $1,120, while at the end of 30 years, with one more thinning, there would be left on the ground 300 trees, valued at $6,000, which, with the amount received for the three thinnings, would make an aggregate of $8,920, as the returns of a single acre, properly set with larch, at the end of 30 years. All these accounts gave us a strong desire to see Mr. Schofield's acre of trees, and last fall, being within a few hours' ride of Elgin, we visited that gentleman, and saw not one acre, but many acres, and not a mere experimental plot, but a dense forest, with shady avenues, and where nature was doing her own pruning to form clear and stately trunks. We shall have occasion to refer to this plantation again, and do not now go into measurements; suffice it to say that we were convinced that if Mr. Schofield was an enthusiast, it is a great pity that many more were not afflicted in the same manner, and that we were fully convinced that there had been no over-statement or exaggeration in regard to his plantation. If any are in doubt that one in middle life can plant a forest with a hope of seeing a profitable result to his labors, a visit to this plantation would satisfy them. Other trees may yield even quicker returns than the larch, but we give this example because we have seen and examined it. It may be well to state here, that though Mr. Schofield has been so frequently mentioned as an advocate of the European Larch, his forest is by no means confined to this, and he is a great admirer and enthusiastic planter of other trees, both evergreen and deciduous.

The Trailing Arbutus in the House.

The beauty and fragrance of the Trailing Arbutus, or May-flower, (*Epigæa repens*,) are widely known, and many wonder why it is not cultivated, until they have made several unsuccessful attempts to transfer it to their garden. We have transplanted it repeatedly, and always failed. It does not flourish in the same border with cultivated flowers, either in the shade or sunshine. It withers in garden soil. Manure is death to it. Transplanted to the cemetery-lot, the leaves turn brown and die. It is coy under all the wooing arts of the gardener, and delights not in cold-frames or forcing houses. Madam, who is not a gardener, said she could make it live. She knew she could. "She would like to see the plant she could not halter-break, and make it go under saddle." She had a considerable to say about studying nature, the habits of plants, and the Trailing Arbutus growing on the north side of hills, courting the shadow of ledges and creeping under moss and dead herbage. I thought the plants would keep green for a time, and fill a vacant place in the window, even if the experiment added to the often repeated failures. Late in October I procured the desired plants fresh from the woods with a quantity of the leaf-mold, and gravelly soil in which they grew. She put a part of them in the Wardian case in a bed of moss, with ferns, Twinberry, Adders-tongue, and other plants that love the shade. The Arbutus took kindly to the new atmosphere, and very soon began to make new shoots and leaves, and it is now the gem of the collection, and the admiration of the household. The other plants were put in a bed of leaf-mold in a soup-plate, two or three inches deep, and club-moss was trained around the edge of the plate for a border, making the dish a very pretty ornament. This dish has been kept in a room without fire, at a temperature varying from forty to sixty, under shelves appropriated to other plants. It does not receive the direct rays of the sun, but has plenty of light. It is watered two or three times a week, and the mold is kept moist. The plants evidently think April has come, though it is mid-winter, for the leaves are starting and the pink blossom buds are in sight. We give it up—Madam has a triumph.

CONNECTICUT.



CATTLE CORRAL, VICTORIA COLONY, KANSAS.—*Drawn and Engraved for the American Agriculturist.*

The above engraving is a representation of the corral, or enclosure in which are kept the calves of the large herd of native and thoroughbred cattle belonging to Mr. George Grant, of Victoria, Kansas. When this is completely finished, it will afford shelter for 1,000 head. The sheds, each 1,200 feet long, and 24 feet wide, are built of stone and wood, and are roofed with 12 inch boards 12 feet long, sloping each way from the center. The center wall dividing the sheds, is of stone, and 8 feet high. At one end is the herder's cottage, and near the center is seen the stable in which the thoroughbred calves are housed, and over which is a hay-loft. The whole corral is surrounded by a naturally impassable barrier, consisting of the steep bluffs of a bend of a fork of the Victoria River, except in one narrow neck where are the fence and gateways. The inner bank slopes gradually, by a clean gravelly shore, to the river, upon the opposite side of which the bluff rises so steeply as to be impassable for stock. This spot, fortunately so admirably suited for the purpose to which it is now applied, has a historical interest, it being the site of the old Fort Hays; this, not many years ago, was in the center of the Indian country, and has been commanded by Gen. Sherman and Gen. Custer. Thus the appliances of war are here usefully turned to the arts of peace, and calves now feed where once cavalry horses grazed. The river banks are high and well timbered, and afford excellent protection to the enclosure. Mr. Grant's herd consists of several hundred native cows, and some of the best bred Shorthorn and Polled Angus bulls. The sheep corral previously described and illustrated in the *American Agriculturist*, (June, 1875), is some miles distant from the calf corral. Since describing the sheep corral, we have learned that the large flock of over 7,000 sheep is in the best condition, the sales of wool in 1875 netted over $6,000, and the lambs more than paid the whole expenses of the flock. We have also from Mr. Grant the following figures, showing the cost and proceeds of the crops of hay, grain, and fodder, raised at Victoria in 1875, viz:

EXPENSES.

Sundry expenses	$ 833.97	
Seeds	770.14	
Labor	2,096.99	
Horse-feed	1,041.36	
Management	2,136.58	$6,879.04

RECEIPTS.

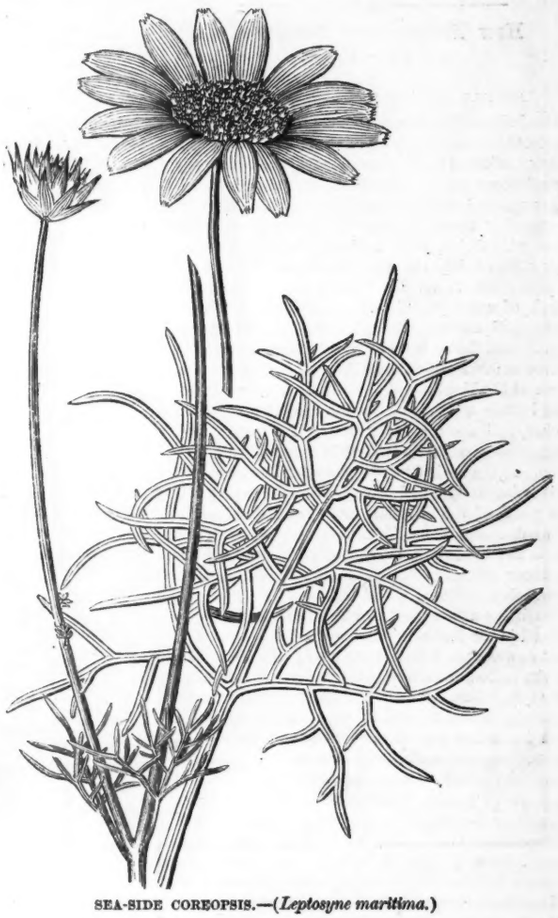
Cash sales	$ 720.74	
Seeds on hand	394.95	
1,791 bushels rye	1,074.60	
384 bushels oats	134.40	
114 bushels Hungarian grass	159.60	
468 tons Hungarian hay	7,020.00	
100 tons prairie hay	500.00	
400 tons rye straw	1,200.00	
55 tons oat straw	165.00	11,369.29
Profit of crop		$ 4,490.25

The receipts might have been largely increased had all the grain and seed been thrashed, but a very large quantity was left in the straw and hay. The crops are credited at the price at which they are charged to the stock when fed. These prices are comparatively low, and the winter's keep of a sheep upon the fodder amounts to less than 60 cents per head. The enterprise of Mr. Grant has abundantly proved that stock keeping in western Kansas may be made very profitable if rightly and intelligently managed. Several young men who have purchased tracts of land in this colony, among whom are two sons of Ex-Mayor Gunther, of New York City, are doing well with their flocks. A number of young English gentlemen have also settled in the colony, and are succeeding well with their cattle and sheep, and their farming enterprises. This successful experiment of Mr. Grant shows conclusively that stock-keeping on the western prairies, which were once supposed to be fit only for buffaloes and Indians, may be made very profitable, if carried on with sufficient skill, industry, and capital. But it would be wrong to encourage the idea that any person empty-handed, may safely enter into this pursuit with the expectation of making money. Permanent shelter and some provision for winter feeding are required, and a certain amount of capital is needed for these. $5,000 at least would be needed to enter this business safely, and to provide means by which risks may be avoided.

The Entire-Leaved Cleome.

Several years ago a person "out-west" advertised with considerable flourish the seeds of "prairie flowers," and published a catalogue of them which fairly bristled with long botanical names, which no doubt gave to many the impression its author must be very learned, and the plants very fine. It came in our way to let the gas out of this bag, and to show that it was an attempt to pass off the veriest possible trash, (horticulturally speaking), upon those unfamiliar with botanical names, and we are glad to know that by putting unsuspecting seedsmen on their guard, they were prevented from selling the seeds, and thus disappointing their customers. Still, amongst all this rubbish, there could not help being some desirable things, one of which was the Entire-leaved Cleome, a very showy plant found from Nebraska southward to New Mexico, and westward to Oregon. The plant does not seem to have any common name; *Cleome* is an old name from a Greek word, meaning *closed*, which was long ago applied to a species found in the south of Europe, and though no one is able to see how it applies to these plants, it is a pleasant sounding, easily remembered name, and will answer quite as well as any. The genus, *Cleome*, belongs to the Caper Family, of which the majority of our representatives are annuals; there are three or four species in this country, the best known of which is the one here figured, the Entire-leaved Cleome, (*C. integrifolia*). This is a much branching annual three or four feet high, with compound leaves of three entire leaflets. Each branch is terminated by a raceme of showy pink or purplish-pink flowers, which keeps on elongating, the flowers opening in succession for a long time, so that when the pods from the first flowers are ripe, new buds are just appearing above to prolong the bloom. Those who examine the structure of flowers will find these of considerable interest, as the pistil is raised up in the center of the flower in a manner quite unusual. The foliage of this, as well as in other plants of the family, has, when bruised, a peculiarly pungent odor which is not pleasant. Seeds of this and of a related plant, *Polanisia*, were at one time offered as remarkable honey producing plants, but we have not heard that they have been cultivated to any extent to afford pasturage for bees.

ENTIRE-LEAVED CLEOME.—(*C. integrifolia.*)



SEA-SIDE COREOPSIS.—(*Leptosyne maritima.*)

The Sea-side Coreopsis.

In noticing desirable plants, we as a general thing confine ourselves to those which are readily obtained from either the seedsman, florist, or nurseryman, and if we depart from this rule it is when, as in the present case, a demand for the seeds can be readily supplied, and if the seedsmen do not have them, they can easily procure them. We have called this plant a Coreopsis, but it has had considerable trouble in the way of names; it was discovered over 30 years ago by Nuttall, near San Diego, Cal., on rocks overhanging the sea, and considering it a new genus, he named it *Tuckermannia*, in honor of Prof. Tuckerman, now of Amherst, but then a young botanist of great promise, and gave it the specific name, *maritima*. on account of the locality in which he found it. Later, Prof. Gray, finding that the plant was not different from an earlier genus of De Candolle, *Leptosyne*, (from a Greek word meaning *slenderness*), called it *Leptosyne maritima*, but now, worse than all, here come Hooker & Bentham, who say that the thing is not sufficiently distinct to be kept out of *Coreopsis*, and if they have their way it will be neither *Leptosyne* nor *Tuckermannia*, but *Coreopsis maritima*. It will be seen in another article, that Prof. Gray sticks to *Leptosyne*, and doesn't follow Bentham & Hooker, and we shall leave these giants to fight it out, though in this Centennial year we shall take the say of an American botanist for an American plant, so far as the scientific name is concerned, and hold to *Leptosyne*, but as a sort of compromise, we will use Coreopsis, which is sufficiently common to be regarded as English, for the popular name, and call it Sea-side Coreopsis. The plant is especially noticeable for its elegant habit; its smooth, handsomely and finely divided leaves are all near the base of the stem; the flower stems, only about a foot high, bear heads of yellow flowers, much like those of a large Coreopsis, which are over two inches in diameter, and are produced in continued succession all summer long, and if placed in the greenhouse, will bloom all winter. The plant is rather fleshy, and does not like wet, and like some other California plants, it thickens up the base of the stem to form a sort of a tuber, which should be taken up and treated like a Dahlia root. This species was introduced into cultivation by Nuttall, soon after he discovered it, but it was lost for many years, but has recently turned up again, and the seeds may be

had of the California seedsmen. A few years ago Dr. Kellogg discovered another species, *L. gigantea*, upon the islands off the coast of California, which, from the description, must be a fine plant; he sent seeds to eastern friends, but no one, so far as we have learned, has succeeded with it here, though it does well in the gardens of San Francisco.

How Flowers are Fertilized.

BY PROF. ASA GRAY.

ARTICLE II.—"COMPOUND FLOWERS."

Dandelions, Sunflowers, Thistles, and the like, are troublesome to very young botanists, who hardly know what to make of them. They were equally troublesome to the old botanists of a hundred years ago and more. They tided over the difficulty by naming them "compound flowers," and the name still holds, more or less. But the botanist now-a-days brings the thing to a head, and, except in deference to an old fashion, would no more speak of a compound flower than he would of a compound sheep. He will have you clearly to understand that it is a cluster of flowers, the green leaves around which may imitate a calyx, while some of the blossoms of the cluster, or all of them, may imitate petals, and so the whole look like a flower, and answer for a flower, for ornamental purposes—seem to be one, while it is really a multitude. It is a sort of "*e pluribus unum*"; and now, that being understood, the question arises, what is the good of it? Unions—national, individual, or of whatever sort—are for mutual advantage; and I am to show that this is true of such close unions as these, of many blossoms into what has often been taken for one.

To make a fair start, we must begin where we left off in the first article, about Bell-flowers. The Bell-flowers, we found, have a way of discharging all the pollen of their anthers, and loading it upon the style, where bees can help themselves to it, and convey part of it to the stigmas of another blossom. And in the last one of the Bell-flowers illustrated, the anthers were united in a tube around the style, at first enclosing it; then, when the style had got its load of pollen, it lengthened below, and so pushed up the pollen-laden portion into sight, and where it is convenient for the bees. Now in "compound flowers," almost exactly the same thing is done in almost the same way, but yet with a difference.

Each one of the central flowers which fill the center of a White-weed or Sunflower, is much more like a Bell-flower, except in size, than would be supposed without a close inspection. To show what is meant, instead of a Sunflower or White-weed, I take something much less common, merely because it is now before me, and is of convenient

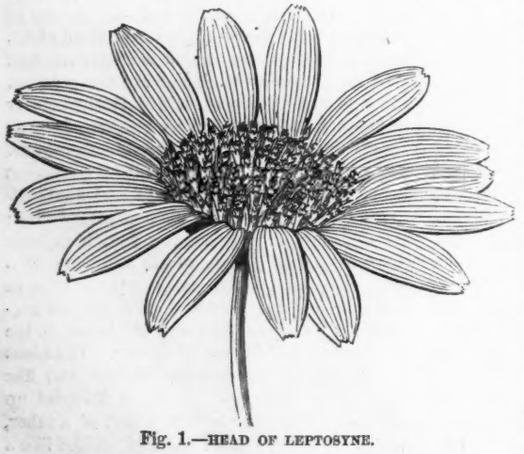


Fig. 1.—HEAD OF LEPTOSYNE.

size, the parts being a good deal larger than those of a Whiteweed. It is a handsome plant which grows along the sea-shore in the southern part of California—*Leptosyne maritima* is its name—and as to appearance, it might be a large yellow *Coreopsis*, the difference being only one particular, which will be mentioned presently. Fig. 1 represents a flower-head of it, of the natural size. In fig. 2, we have, a little enlarged, one of those fourteen or fifteen "petals," as they would be called at first sight by one who did not know better; also one of those bodies which fill the whole center. Both have, we see, a forming seed-like fruit or grain at the bottom; otherwise they appear to be not much alike. Regarding for the present only the slender left-hand one, we observe that this is a perfect flower. The "grain" at the bottom is the lower or seed-bearing part of the pistil; on it rises the slender corolla, five-lobed at the top; out of this projects the five anthers joined in a tube, just as in the "*Symphyandra*" Bell-flower of the former article; and out

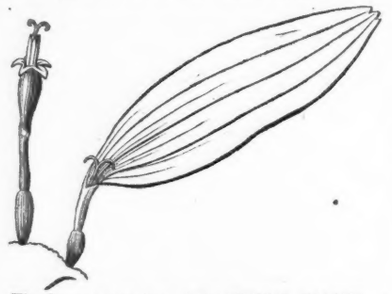


Fig. 2.—A MARGINAL AND CENTRAL FLOWER.

of this projects the tip of the style; here 2-forked, or with two stigmas, instead of three. To make all plain, take two of these flowers (fig. 3 and 4), both younger, and magnify the upper part with a com-

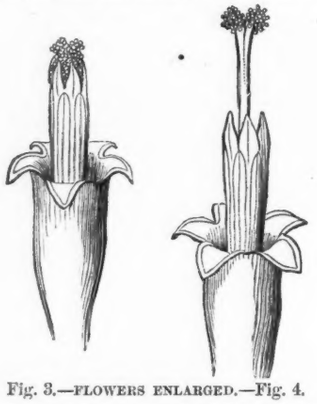


Fig. 3.—FLOWERS ENLARGED.—Fig. 4.

mon pocket magnifying-glass, fig. 3 shows a young, and fig. 4 an older flower; now the likeness to that particular sort of Bell-flower begins to show. Here there is no need to slice down the corolla, for the parts concerned project well out of it as soon as the top of the corolla opens. In fig. 3, the younger, we see the tube of anthers with a heap of pollen at the top. In fig. 4, showing the same flower a day older, the style has lengthened and projected; its tip is seen to be a two-pronged brush; at the beginning it was at the bottom of the anther-tube. But gradually lengthening by growth below, it was pushed up through the tube, driving all the pollen before it; much of this still sticks to the rough, brush-like tips in fig. 4; by the next day these open and recurve as in fig. 5, (more enlarged); and the stigmas, on which the pollen acts for fertilization, occupy the inner or now upper face of these two forks.

Now we have only to notice that these flowers open in regular order from the circumference to the center, and are a week or more about it. At the time when the outermost and earliest are in the condition of fig. 2, and the style as in fig. 5, *i. e.*, just ready to receive pollen, the rows next within will be in a condition of figs. 3 and 4, *i. e.*, ready to supply pollen, but not to use it; and so on in succession through to the center. Possibly the wind may blow some of this pollen from the one to the other; but the grains are slightly moist and viscid, so this is unlikely. But flying insects of all sorts visit these flowers, either for a little nectar or for pollen; these, as they crawl over the tops of the thickly crowded blossoms, carry the pollen from flowers that are ready to give, to others ready to receive it, whenever they move from the center towards the circumference. And when they fly from one flower-head to another, they produce still wider cross-fertilization. Now and then a flower will be likely to be fertilized by its own pollen, but not often. The arrangement evidently is for cross-fertilization; and the advantage of this close association of many flowers, which was the problem in hand, is found in the great facility it offers for co-operation in this matter.

Fig. 5.

But why the more showy flowers surrounding the whole, with a great flag-shaped corolla, turned outwards, so as to look like petals? And why have these flowers, (as we see in fig. 2), only a pistil and no stamens? To answer the last question first; as they are the outermost and earliest, they could not supply pollen, if they had it, to any of their associates; and they are themselves promptly fertilized by the adjacent and earliest perfect flowers that open. There is a saving, therefore, in their being pistillate or female only. As for the large corolla, that is a conspicuous and bright-colored flag, hung out for show—not for a vain show, but to attract insects from a distance.

Sometimes these large and petal-like marginal flowers are merely for show, having no pistil, or a mere vestige, being reduced in fact to a flag-shaped corolla. This is the case in Coreopsis and Sunflower. In others they are wanting altogether, and the perfect flowers take on the duty of attraction as well as of seed bearing—sometimes by their corollas all becoming flag-shaped or strap-shaped, as in Dandelion and Chicory.

So a "compound flower," is an association for mutual advantage. It is sometimes one, like primitive society, in which all the members have the same office and do the same work; while others have reached the more advanced state, in which the work is divided—some individuals taking the ornamental part of the work, some indeed becoming merely ornamental, but still useful.

Since we have come to understand this, there is no need, and we have no reason, to suppose that any members of the floral society, or any parts of a blossom, exist for beauty's sake—as some have thought. They are beautiful that they may be attractive, and attractive that they may be useful. If in some cases "they toil not," the glory in which they are arrayed is not for self-glorification, but for the good of others.

Bunching Asparagus.

Asparagus for city markets must be neatly bunched; in villages we sometimes see it offered for sale loose, but in cities it could hardly be sold in this condition. Bunching is slow work, and difficult to do handsomely without some contrivance to hold the shoots while they are being tied, and to secure uniformity in size. The old buncher, (fig. 1), is better than nothing. This consists of a board with four pins 6 inches long, and placed about 4 inches apart each way, to form a square. Two strings, usually of bass matting, are laid down on the board, which may be set on a bench up against the wall, or have a back made of another board

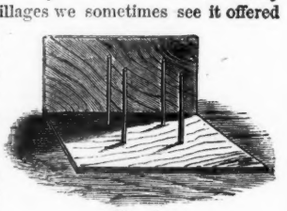


Fig. 1.

tacked on it at right angles. The asparagus is laid on the buncher between the pins, the tops touching the back or wall, to keep them even. When the bunch is large enough, the strings are tied tightly, and the but-end of the bunch cut square; one string is near the bottom, and strong, the other near the top, may be smaller. There are several mechanical bunchers, the best we have seen being that invented several years ago, by Mr. S. B. Conover, who has since then considerably improved it. The engraving, (fig. 2), shows the construction; the asparagus is placed in between two brass strips,

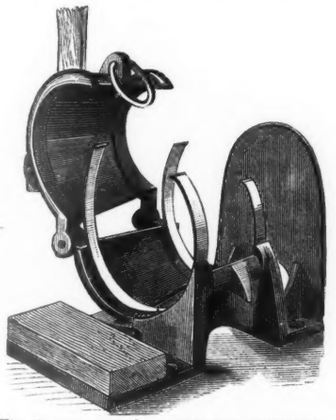


Fig. 2.—CONOVER'S ASPARAGUS BUNCHER.

the hinged part of the buncher is brought down by means of the lever, and held in place until the strings are tied. The bunch is usually 4 or 5 inches in diameter, and 8 inches long, the size being usually smaller early in the season, than later. Not only does care in bunching pay, but so does care at every step. In cutting do not long expose the asparagus to the sun, or it will curl up. Before bunching wash carefully in clean water. Do not bruise the tops. *Assort* carefully, making two sorts as to size, and pack the bunches of the firsts and seconds separately. If the tops of any shoots have "broken," or grown too much, do not bunch them; they injure the sale, but eat them at home, and thus have the best. Keep the bunches always upright, and if to be kept for some hours before packing, stand them on wet hay in a cool, dark cellar. Pack upright in crates as high as the bunches. If to be sent to a distant market, set the bunches on wet grass and see to the ventilation.

An Iowa Gardener's Success.

If we say that two men fail in gardening where one succeeds, the estimate will no doubt be within the truth. By gardening, we here refer to that which is carried on with a view to profit, whether in raising vegetables or small fruits. The reasons for these failures are to be found in the fact that so many undertake gardening without any previous experience, and with too great expectations. They read Mr. Peter Henderson's account of having an average net return of $300 per acre for celery, and Mr. William Parry's statement of a similar profit from strawberries or other small fruit, and take up pencil and paper—5 acres of celery at $300=$1,500 profit—4 acres of spinach at $300=$1,200—5 acres in miscellaneous vegetables at a profit of at least $200, or $1,000—in all $3,700 profit. It is equally easy to make the same number of acres pay—*on paper*—a similar profit on strawberries, raspberries, and other small fruits. Calculations of this sort are made over and over again by clerks, bookkeepers, mechanics, and others, who have heard of the success of others in gardening, and who can see no reason why they may not reap these profits, and they are most frequently made by persons who never grew a celery plant, and hardly know a blackberry from a raspberry bush. Such persons of course fail, and then blame those who have written about such matters for misleading them. They forget that the success of such men as Henderson, Quinn, Parry, and others, have been by beginning small, and only enlarging as they acquired experience—and while their experience, as recorded in their writings, is of the greatest value to others, another can not, no matter how faithfully he studies it, appropriate it and substitute it for his own. While we would not discourage those who would undertake any form of gardening, for we believe that there are abundant opportunities all over the country for those who will undertake it in the right way, we would repeat a warning already given more than once, and which needs to be frequently given—go slow until you know the road. Gardening on paper is easy—gardening in the garden is not easy, but it can be made successful and profitable, where there are brains to properly direct the hands. Failures from over sanguine estimates by inexperienced persons, are so common that one need not go far to find them—but as an illustration of what may be done by beginning properly, working patiently—profiting by mistakes, and, what is quite as important as anything, adapting the culture to the locality, we give

Mr. B. Kemper's Experience,

condensed from the notes he sends us. Mr. K. lives in Muscatine Co., Iowa, but his business, coopering, being dull, he bought a few acres of land, to raise vegetables for a neighboring market. He says: "The first two years I did not make much progress, as my land had been poorly cultivated, and with an abundance of weeds. I have learned by experience, that to raise nice vegetables and make gardening profitable, you must as much as possible raise your own seeds. I buy a great many seeds, but they often fail, until they become acclimated and adapted to our climate and soil. [An important point with many plants, but one which few think of. ED.] I use my own seeds, when possible, for such sorts as there is the greatest demand for in our market, such as cabbages, tomatoes, sweet corn, and sweet potatoes. My early cabbages are mostly "Fottler's Drumhead"; this heads with me as early as the "Early Wakefield," and by letting it stand a week or ten days longer, each plant will become a good solid head, weighing from 5 to 25 lbs. When I commenced gardening, I bought several different kinds of tomato seeds, of which I found the "General Grant" the earliest and most productive. I always take my seed from the first and nicest tomatoes. I also have the "Boston Market," the "Trophy," and "Canada Victor," which did not prove very successful last year, but I shall give them another trial. I put out seven hundred of the "Genl. Grant" plants, which brought $250, though I sold the most of my tomatoes for 25 cents a bushel.

I planted several varieties of sweet corn side by side, and gave them the same culture, some kinds brought very small ears, others mostly ran to suckers. I saved seed of this, and the next year tried more kinds, among which was the "Adams' Early," which had good sized ears, but was not sweet. I raised it along side of the others, and the kinds mixed and turned out to be early, with nice large ears, having from eight to twelve rows. For the last two years I have planted none except seed from ten and twelve rowed ears, and have so improved the corn and land, that it brings 14,000 salable ears to the acre. My corn sells well on account of its earliness and size, but I have no name for it. It is excellent for shipping, because of its small husk, and is more profitable than my pure sweet corn, which I made on the same principle, and sold of it until the "Evergreen" came in. Four years ago I tried the "Early Concord," it had a little larger ear, but it was not so early and productive as my own. I also tried the "Early Success," which I saw advertised in your paper; it was planted at the same time with my early corn, and when I picked mine, the "Success" was just silked, and only had one ear where mine had three. It had a fine flavor, but I brought my late corn to market sooner, with from twelve to sixteen rows, while that had only eight. Last season I tried the "Early Minnesota," this proved a week later, it was excellent in flavor, but had a small ear, with red husk, silk, and cob, which did not suit my customers. [There is something wrong about this; the "Minnesota," which we have grown three years, originally from Vick, has a white cob, and is the earliest really sweet corn, with a good sized ear, that we know of. ED.] I drill in my corn in rows four feet apart; this gives room to go through the rows with a horse and cultivator, after a hard shower of rain; when it is three inches high, I take a double shovel plow, with small shovels, and throw earth close to the corn, so that all the weeds are covered. (I do not mean the coarse weeds, as I have no other than Purslane). In about a week I throw up more earth. I put in enough seeds to allow for what stalks may be damaged by cultivating. When the corn is 7 or 8 inches high, a boy thins it out, so as to leave a stalk every 4 to 8 inches, at the same time pulling out any weed stalks. Covering the lower joint of the corn when it is small, gives it more root and less suckers, and promotes its earliness, so that it is generally ready for market the first week of July. I raise nearly all varieties of vegetables, and always sow in drills, even such as melons, cucumbers, and beans, so I can go through them with a horse and cultivator. The prices of vegetables here are so low, that it does nor pay to hand-hoe them. I am often asked how I keep the weeds down; my soil is light and sandy, and I make a shallow furrow and drill the seed in it, and cover with a hand-cultivator; when the plants are up, I take a small one-horse harrow, with handles like a plow, so that I can harrow very close up to the row, and throw earth into the furrow. I am careful to buy my seed from first-class dealers. My garden consists of 15 acres, and on most of it I raise two crops, and do the work with my boys, the oldest of which is 16 years.——This is an account which inexperienced gardeners may read with profit, not so much that they may follow precisely in the ways of the writer, for these are not suited to all localities; but it shows that the writer has his heart in his business, and if one thing does not suit him, he tries again, and is bound to get a variety that will be best for *him*. We have not space to add his commendatory words in relation to the *American Agriculturist*, to the teachings of which he attributes a large share of his success. He thinks if all engaged in cultivation of any kind, should take it, "it would in many cases save them trouble and expense,"—a point on which we agree with him.

THE HOUSEHOLD.

☞ (*For other Household Items, see "Basket" pages*).

Home Topics.

BY FAITH ROCHESTER.

"That Boy!"

Of course there is a difference in boys, but isn't your healthy, wide-awake boy a rather noisy animal? If he has to spend a day in the house, doesn't he worry and tire you half to death? His voice is seldom "low and sweet," and his footsteps are all emphatic. These growing boys are hardly suitable for house-pets, certainly. They can't help it, and we ought not to expect them to change their nature. But oh! for patience to bear with them. And oh! for wisdom to do for them just what is needed for the proper cultivation of their natures. Their mischief and their scrapes are often simply the result of unemployed steam which they have no power to repress, and for which there is no proper work supplied. The boy who hectors and pushes and pulls the sister whom he dearly loves, is really suffering for somebody or something to wrestle with. He needs again and again to test his power. He wants something that he can kick with all his might, something to jerk about, something to command. These things are not especially manly, but they are among the instinctive workings of the boyish nature when it is full of animal vigor. There is, no doubt, scope for all this youthful activity and love of enterprise in the general economy of nature, if we can only find out and fall in with her plans. If we can only furnish attractive work which will meet a boy's necessities in the

way of kicking and pushing and pulling and shouting, it will be a great gain; but attractive play which meets these necessities is not to be despised.

Dear little fellows! They seem so naughty, at times, to one who has had little experience among boys. But when your boy's noise is hushed at night, when the busy feet and hands are still, and the active inquisitive brain is resting in slumber, does not your mother-heart go out in strong love and sympathy for the little fellow? He is all right, after all. That is, he is what it is natural that he should be, and you would not exchange the spontaneity of his present style, wearisome as it often is, for a sober, care-taking, inoffensive kind of boy, always mindful of his tones and steps, and schooled in all conventionalisms.

How he does eat! When he is hungry he is fearfully so, and he is inclined to eat much and fast, with little attention to manners, except as he gets line upon line, and precept upon precept. I know of people who would tame these noisy active boys, and bring them into quiet subjection, by starving them to it, or by limiting their daily rations in such a way as to keep down most of the bounding life that makes the vigorous healthy boy such a lively specimen as he is. Such well-meant methods seem to me fraught with evil. No. Let young growing animals have all of the plain wholesome food they desire at their regular meals, and give them a free field in which to caper and grow. True, they must learn to work in harness, and the training should be begun early, but it should have small beginnings. Through all of childhood and youth, a boy has a right to daily play-spells; longer and more frequent the younger he is. Indeed, I believe that all of us have, "in the nature of things," a right to daily "play spells" of some kind, whatever our age.

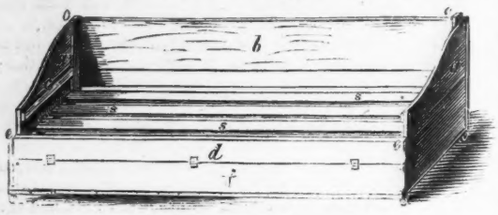


Fig. 1.—FRAME OF LOUNGE.

Farmers have so many little tasks and bigger jobs that boys can be kept at, that they need often to consider what is reasonable treatment for calves and colts, and to reason from this what is the proper physical training to give boys.

"Dr. Spanxter."

You never read Rose Terry's capital little story by the above title? More's the pity. I have read it half a dozen times to my children, who "see the point" every time. We have it in an old number of "*Our Young Folks*," and I should like to put it where all parents could have access to it. I wonder if H. H. ever read it? I suppose she would have all the children so judiciously trained from the first that little "Prince Pucker," crying his eyes out for the moon, would be an impossibility, and so perhaps there would be no necessity for summoning Dr. Spanxter. But "there's the rub." Judicious training from the first doesn't seem to come natural and easy to some of us mothers. Our hands are full of every thing else, and we fail to see the first steps of training, and presently find ourselves confronted by a small rebellion, or by persistent and unreasonable naughtiness, which must be put down immediately; and in our harrassed condition, it seems necessary to stop the child's nonsense, and teach it a lesson in behavior by the speediest process. Hence the popularity of Dr. Spanxter, or Dr. Birch, as the physician of the rod was called in the days of my youth. I surely believe that these old-school doctors, with their shingles and their whips, are doomed to pass away; and I doubt whether they do as much good as mischief even now. But I suppose we can not spare them yet.

When Dr. Spanxter found that his brief prescription for the prince who had cried himself sick, because no one would give him the moon, "Spank him!"—was only carried out with a polished dainty little shingle, trimmed with swan's down and jewels, which only tickled the little prince when administered gently by his royal father, he was justly indignant. He tossed the silly weapon through the window, and pulling a genuine shingle from his pocket, spanked the prince so soundly that he needed but one repetition of the dose,

Nevertheless, it seems to me that the kiss and the blow need hardly be separated. It does not injure the moral effect of a sound spanking, to hug the little sufferer in your arms immediately afterward. The child does not understand by this that mamma is sorry she spanked it, but only that she still loves it, and, though she had to resort to the only effective argument at hand, she is willing to cut short or relieve its pain. They ought to feel that mother punishes *because* she loves them, and because she cannot let her darlings be naughty, disobedient children, or grow up with bad habits. It is sad for children to suppose that their parents punish them because they do not love them, or are simply angry with them. I am very sure of one thing, and that is, that preventive measures are better than measures merely curative, however gentle these may be; and among preventive measures, attention to a child's health is as important as gentleness and firmness in its government. An important matter to young and old is

Ventilation in Winter.

It is impossible for us to suffocate ourselves in our dwelling rooms, unless extraordinary means are used to bring about such a result. The pure air will creep in through divers cracks about the windows, doors, and floors, in spite of all our efforts to "keep out the cold." It is all right to try to keep our rooms warm, and it is very proper to chink up the cracks, but we should see that some provision is made for the entrance of pure air. Though that which enters unavoidably through cracks, and by the frequent opening of the doors, may keep us from actual suffocation, it is not usually enough to keep the air of the room pure, and its inmates in high health. It sometimes seems as though people study to see how little pure air they can live upon. They allow of various needless contaminations of the air, saying, in answer to one's objections, "Pooh! I guess that won't kill anybody!" As though this is the main object in seeking pure air—merely to escape the point of death.

Many persons suppose that nothing impairs the air of a room, unless it be something positively poisonous, as, for instance, the effluvia of decaying animal or vegetable matter. This is not so. Wherever there is any permanent odor, though it may be only the fragrance of flowers, or the smell of oranges, the air is in some degree less pure than when positively odorless; and though sweet odors give pleasure at times, and in moderate degree, they should be sparingly used, and banished entirely during our sleeping hours. Bridget, in the kitchen, breathing more than half her time air loaded with the odors of the various kinds of food, and an occasional variation of scorched fat, may seem to be a tolerably healthy person, but in spite of her exercise and good constitution, she is less healthy now, and more likely to suffer from various diseases, and to die in early life, than she would be if she had really pure air to breathe, in her kitchen and in her sleeping-room. No one, however constitutionally endowed with health and strength, can enjoy the *finest* health without pure air to breathe habitually. The more one becomes accustomed to pure air, the more quickly is any contamination perceptible, and cleanliness in all respects seems more and more desirable.

"I believe you let too much air into your room at night!" I have more than once been told. "Too much air!" Is that possible? I would let in all out doors if I could, when the outside air is not unduly moist or cold. I prefer not to have the wind blow upon the back of my head, but if it only blows into my face, and I am otherwise well protected, I do not care. I have two windows open in all moderate weather, in the large room where I sleep with the children this winter. In all weather there is one unclosed opening which supplies pure air from out-doors. This is made by raising a window six inches from the bottom, and filling the opening so made, below the lower sash, with a closely fitting board. The air enters through the spaces between the upper and lower sashes, and however strong the wind comes from that quarter, none blows directly upon a person sitting near the window. This suffices for ventilation in the coldest weather, but I am always glad when it is warm enough to allow of letting in more air.

Sleeping Warm.

I believe it is impossible to have too much pure air, but it is possible to have the air colder than feeble persons can breathe with comfort or with safety. For hardy persons there is no danger in cold air, provided they have plenty of bed-covering, and keep their mouths closed. It is unwholesome for any one to sleep cold. One of the hardest things for feeble persons to endure, is getting into a cold bed to sleep. It draws so much upon the already low vitality, that before the cold bed is warmed, its occupant is so thoroughly chilled that it is almost impossible to get warm again. In this way the system is unnecessarily taxed, and the general health reduced. When one must sleep in a cold room, it would be better to wear flannel night clothes, (warmed before putting them on, and perhaps with woolen stockings for night use in exchange for the stockings worn all day), or to have the bed warmed before entering it. This can be done with a warming-pan, or by rolling a jug of hot water about between the sheets.

I find by experience that children rest more quietly in rooms well ventilated, though the air is quite cold during the night, than when they sleep in warmer and closer rooms, and I think it well to accustom their lungs to cold air in this way. It is very undesirable to make hot-house plants of our children. They should be dressed so warmly, both by night and by day, that they can be comfortable in rooms moderately cool.

The "Centennial" Extension Lounge.

BY E. O. LEE, GLOUCESTER CO., N. J.

In the *American Agriculturist* for March, 1873, is a description of an extension lounge, which "is a very convenient thing to have in the house," especially when the house has only two rooms on the ground floor, and one craves the luxury of sleeping

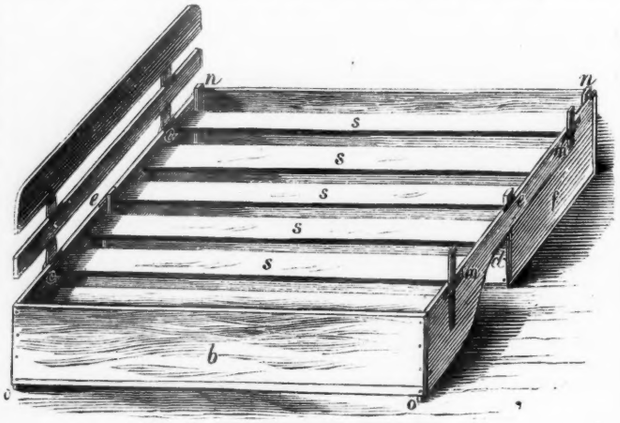


Fig. 2.—THE LOUNGE AS A BEDSTEAD.

near the sitting-room fire—still I have hit upon a plan which suits me better, the construction of which is shown in the accompanying sketches. Dimensions of lounge 2 feet by 6; hight of box 13 inches. Figure 1 shows the frame of the lounge complete, and fig. 2 the bedstead. *A*, arms; *b*, back; *c*, cleats on which the slats, *s*, rest; these slats are five inches wide, and ½-inch thick, and of oak; *d* is a board five inches wide, hinged with leather, and held in place by a small hook at each end, to be let down when the lounge is extended, as shown in figure 2. Small strap hinges are shown at *e*; *f* is the box for the bedding, head-board, etc. The head-board is made of half-inch boards, nailed to oak cleats ½ by 1½ inch, and held in place by clasps, as shown more plainly at *m*. The ends, back, and bottom of the box may be made of ½-inch boards, except a strip 5 inches wide at the top, which should be one inch thick. The corner pieces, *n*, should project at least half an inch, to support the back of the lounge, the corners of which should be correspondingly short. The cleats, *c*, that support the slats, should be fastened with nails or screws, three inches from the top, the better to keep the mattresses and bed-coverings in place. The corners of the extension should project an inch or so at *o*, to rest upon the floor when in use as a bed. The mattresses should be a trifle longer and wider than the inside of the lounge seat, with the side pieces five to six inches wide, sewed in with a cord. An opening should also be left in the middle of the top of each, through which to stir up the husks or straw with which they are stuffed. The back and arms may be covered and stuffed to suit the fancy, with a cover of the same kind fitted to one of the mattresses, to be used as a cushion to the lounge during the day. The draping of the front and ends should be in separate pieces, to allow a part of the front, *d*, to be let down when the extension is used. We find this the most comfortable lounge we ever saw, and about as good as any spring-bed.

Dry Earth and Earth Closets.

Probably no invention, or rather application, of so much importance was ever so neglected as that of the use of dry earth in the management of what, for the want of a better name, we call "night soil." The application of earth to this purpose is as old as the days of Moses; the invention consists in the apparatus for applying it, and for this, and for his efforts to popularize its use, the Rev. M. Moule, of England, is one of the world's benefactors. If the deposits which nature requires all to make, were simply unpleasant, and on this account were to be put out of the way as soon as possible, the use of dry earth would be an important one; but when it has been proven, as clearly as can be, that these deposits can cause and communicate disease, and that sickness and death may be traced directly to them in a neglected state, the matter becomes one of vital importance, and one which cannot be too often, or too earnestly, presented to the heads of every household. Col. Waring, who has given much attention to sanitary matters, has several times presented this matter in his articles, where they are more likely to meet the eye of the house-father than of the house-mother, and letters we receive asking for explanations, show that the subject is far from being generally understood by housekeepers. Let one travel among the rural population in any part of the country, and it will oftener than otherwise be found that the one neglected place on the premises is the privy; houses where the interior and mode of living of their occupants indicate comfortable means, refinement, and luxury, will often have for this most important out-building an affair which is repulsive to every sense, and a standing menace to those who must visit or pass near it. The necessity for a reform in this matter is too glaring to require argument; to neglect that which concerns both comfort and health, would be wrong were the better way difficult and expensive, but where, as in this case, the reform is easy and inexpensive, the neglect is doubly wrong. The principle is simply to cover the deposit with dry earth, and is not patented or patentable; various contrivances for accomplishing this, some of them very ingenious and useful, are patented, and where one can afford them, are desirable. But the absence of these need not deter any one from using the dry earth; the requirements are: a receptacle, dry earth, and some means of placing the earth on the deposit; this may be done by an automatic machine or by a simple scoop or paddle. The essential thing is the dry earth or its equivalent; sand will not answer so well; road-dust of a stiff, clayey, loamy kind, or similar earth scraped up from the surface of a field or garden, during a dry time, dried still further on some boards, sifted and stored under cover, is the best; the next best, and nearly as good, is fine coal-ashes, a material that every one who burns coal is desirous to be rid of. An ordinary outbuilding can be cleaned out, the vault filled up, and a box provided which has sled-runners, so that it may be hauled away when full; inside of the building should be a box of the earth or ashes, with a scoop or some kind of shovel; then if every member of the family *will use the earth* at each visit, the inexpensive arrangement will be as effective as the most elaborate; still those who can afford them will find the fixtures made for the purpose, in which the earth is thrown down by the weight of the person, much more sure and convenient. *Note.* The throwing of slops of all kinds into this or any other earth closet must be *absolutely prohibited.* Dry earth so completely absorbs all odors and emanations that a portable closet may be used in any convenient place in the house, and for invalids it is one of the greatest comforts imaginable. If one wishes to save expense, the matter may be greatly simplified. Provide a box to contain a receptacle, fitted with seat and a cover, also a smaller box, to hold the earth, tight, or lined with paper, to prevent sifting, with cover and scoop, these complete the affair. These may be made as ornamental as desired, or be provided with movable drapery. Several companies now make very excellent commodes in which there is a receptacle for the earth, which is let down by a pull as in an ordinary water-closet. We here give illustrations of a

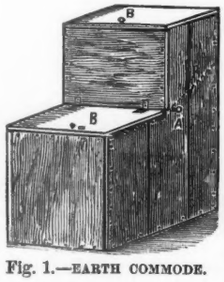


Fig. 1.—EARTH COMMODE.

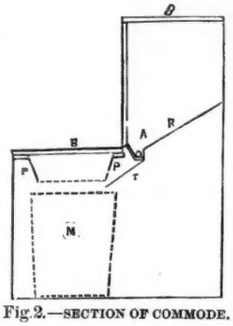


Fig. 2.—SECTION OF COMMODE.

Fig. 3.—EARTH DISTRIBUTER.

Home-Made Commode,

BY L. D. SNOOK, YATES CO., N. Y.,

which is of very simple construction, as shown in the accompanying engravings, fig. 1 being a perspective, and fig. 2 a sectional view, the letters referring to the same points in both. *B, B,* are hinged lids or covers of wood, the lower one opening to the closet, the upper one to the dry earth receptacle, or box. Figure 3 is an earth distributer, which lays upon the bottom of the earth box; three or more holes, one inch in diameter, are made as shown, and correspond with a like number and size made in the bottom of the earth box. The distributer passes beyond the side of the closet, and is provided with a knob, as shown at *A*, fig. 1; moving this laterally, allows a small portion of earth to fall through the bottom upon the tin or zinc conductor *T*, and is conveyed into the receptacle *M*, which is removed through a door at the side, but not shown; *P, P,* is a shield of sheet zinc about six inches wide, and attached underneath the seat or around the edge. Owing to the liability of the earth to pack, a few nails, iron or wooden pins, *X, X,* fig. 3, are inserted as shown. It is best to insert a stiff coiled wire spring between the knob and outer side of the closet, and so arrange the distributor that the earth will only fall upon the conductor *T* when that is pressed inward, the spring forcing it outward as soon as the pressure is removed.

Some Recipes in German Cooking.

Having had inquiries from time to time as to the manner of preparing the dishes named below, we referred them to an experienced German housekeeper, who kindly gives the recipes:

SMOKED GEESE-BREASTS.—Cut out the breasts of young, fat, and well-cleaned geese, rub them well with salt, and with a little saltpeter, place in a jar or other vessel, with a weight upon them. Let them remain thus for ten days, after which put them in smoke for two weeks.

SOUR GOOSE.—To utilize the remainder of the goose after cutting out the breast for smoking, it is prepared as follows: cut up the flesh into suitable pieces; then take of vinegar and water equal quantities, enough to cover the meat, add a handful of small onions, and salt, pepper, cloves, etc.; boil together until the meat is done. This, if put in a cool place, will keep well, and makes an excellent dish when warmed up or eaten cold.

BOYS & GIRLS' COLUMNS.

Playing School.

Isn't it fun to play school? The only trouble about it is that each one wants to be the teacher—but it wouldn't be much of a school if all were teachers, and no scholars. So the best way is to take turns, and then you can see who are the best teachers, and—what is quite as important—who are the best scholars. On rainy days, when you can not go out, keeping school is a capital play for in-doors, and lively youngsters can get a great deal of fun out of it. Only recollect when it comes your turn to be teacher, you must not be too severe. The best teachers among the real teachers are not those who scold the most, and make-believe teachers will find that they can get along with their scholars much better by being kind than by being cross. When you are the teacher, you may be troubled by scholars who will not keep order—who will whisper, or scuffle their feet on the floor as they come in and go out, or who in the school will not sit quietly in their seats, but "fidget" around. Before you

CHILDREN PLAYING AT KEEPING SCHOOL.

get out of patience with your scholars, just stop and think how it is with real scholars, and ask yourself if you havn't done in the real school these things which now vex you, and then may-be you will wonder how the real teacher was so kind and mild with all these things to vex her, and perhaps when you next go to school you will recollect how annoying these things must be, and try not to do them. There are some plays that children in all parts of the world seem to like, and in almost every country children have dolls of some kind, make sand or mud-pies, and play at keeping school. This pretty little picture shows that the play-school is much like the real school; there are the quiet scholars, who come to school to study; there is that girl who never can keep still, her hand is up, showing that she wants something—that uneasy girl is in every school. Then there is the boy wearing the long ears for punishment, and no doubt deserves it; and that other girl, who is always whispering on the sly—and always gets caught at it; but the learned teacher is just now too busy to see her.

Snaring Rabbits, or Hares.

One of our Canada boys writes, that rabbits are plentiful and troublesome, and he would like to know how to catch them with wire snares. We might answer that there was no way by which this could be done in Canada—or the United States either—for the simple reason that there are no rabbits in either country. The fact is, that all the wild animals we call rabbits are really *hares:* one of the differences between the two is that rabbits burrow, while the hares do not, and though our hares may hide in any hole they may happen to find, they do not dig burrows like the European rabbit. As our animals are generally called rabbits, it is not likely that people will soon learn to call them hares, but it is well that boys should know the difference. There are good reasons why rabbits—as we will for the present call them, because every one will then know what we mean—should be caught. In the first place, they do a great deal of damage to trees, especially young trees, and various kinds of shrubs; if not prevented, they will sometimes ruin a young orchard by eating off the bark of the trees. Last winter we found some dwarf pear trees with their lower branches very neatly trimmed; we could not recollect that we had told any one to trim them, and upon inquiring, found that "nobody did it"; it was a rather puzzling case, but when the snow had quite melted away, the rabbit droppings told the story; the rabbits, hard pressed for food, had cut off the ends of the young twigs very neatly, and either eaten them up or carried them off, for not a trace of the prunings was left. The damage they do is a sufficient reason for trapping or otherwise stopping them, but there is another good reason: young rabbits are very good eating, and in parts of the country where fresh meat can only be had now and then, a rabbit pie or stew makes a very nice dinner. So, while we do not approve of allowing boys to catch or kill everything that runs or flies, we think that rabbits are fair game. Probably every country boy knows how to make the box-trap, the top and one end of which lifts, and is held by a string fastened to a peg, which is baited with a bit of apple, or other bait; these traps are pretty certain, and are in most general use. Catching the animals with wire, as our young Canadian wishes to do, can only be done where the rabbits have a regular run. They have a way of going in the same paths, especially in the snow, and they will always follow an old track rather than make a new one. If they are in the habit of visiting a garden, or an orchard, it will be found that they usually come in at the same place, which may be found, and the wire snare set there, or their tracks may be followed, and a place found in a brushy pasture where they have made a run. To use the wire snare, the run must be found and the snare must be placed where they will naturally go through it. The wire used is fine brass or copper; a piece about 18 inches long has a loop made in one end, by twisting, and through this loop the other end of the wire is passed—just as you would make a slip-noose in a string. To set this, the hole in the fence, or the run-way in the brush, must be made so narrow that the rabbit can only get along by passing through the noose; the hole in the fence may be closed by boards, or the brush-run be narrowed by setting in pieces of cut brush, as shown in figures 1 and 2, so that the rabbit can easily pass its head through, but will be caught when its shoulders touch the wire. Of course the loose end of the wire must be made fast by twisting it around a piece of brush, or in some other manner that will hold it. We have given the Canadian friend the best information we have on this manner of trapping, but we never used this kind of snare; this description was sent by an esteemed correspondent a long while ago, who at the same time gave us another way of trapping rabbits; he says that rabbits are very fond of salt, and may be caught by means of a salted string in the box-trap, shown in figure 3. A string is dipped in salt and water and dried; the doors are held open by means of this string, fastened to a peg in the floor of the trap; another salted string is carried from the peg and stretched across the run. The rabbits, finding this salted string, will eat away at it, until they come to the trap, and when they cut that part fastened to the peg, the door will fall, and a hinged leg, bent under the handle in the engraving, will fall into place and prevent the door from being opened. We hope that our friend at the north will not only save the trees, but have many a good dinner.

Fig. 1.—SNARE IN FENCE.

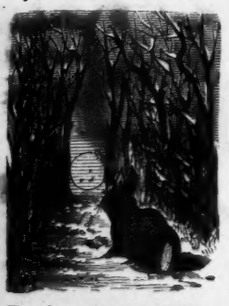


Fig. 2.—SNARE IN BRUSH.

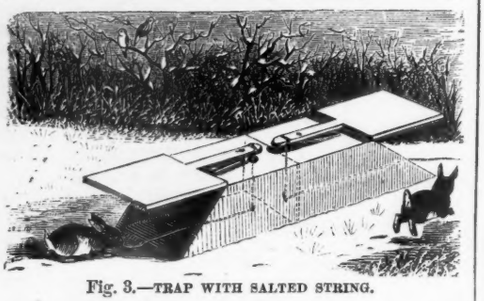


Fig. 3.—TRAP WITH SALTED STRING.

The Doctor's Talks—About Various Matters.

Last month I intended to say, but somehow forgot it, a word to our new Boys and Girls. By "new," I of course mean those who read the paper for the first time. Every year a great many fathers and big brothers take the *American Agriculturist* who never did so before, and of course this enlarges the circle of young folks. So don't be bashful, you new comers; the way to join our family is to come right in; we are not full, and never expect to be, so sit down at the table, (that's the paper), partake of just such food, (pictures and reading), as the rest have, and be one of us. Our family, while one, is rather extended, and "runneth the wide world round," as the poet wrote of the sea, but wherever they are, we try to show no partiality, and all are equal in our regard; still, if we do make any difference, we like the far off ones just a little the best, as we pity the poor youngsters for being away at the "ends of the earth," (don't let some smart youngster tell me that the world is round, and can have no ends!) and are so very long in getting the paper.

"ATTENTION THE UNIVERSE!"

said a celebrated man some years ago, in speaking to a mass-meeting so large that it seemed to him as if all the world had gathered there. So when we say,

ATTENTION YOUNGSTERS!

it is not very much unlike speaking to a good share of the "universe," as it is a call that causes bright eyes to be on the look out from up towards the Arctic region to the Gulf of Mexico; the call runs over to Central America, and down through South America; it takes a step over to New Zealand and Australia; it is heard in other Pacific Islands, and wakes up little ones in China and Japan; then somehow it is heard by quite a big lot of you in parts of Africa, and so the word runs up along the coast spreading into various countries on the continent of Europe, especially Germany and Hungary; is heard in the British Isles, and so finally makes a complete circuit around the whole globe. This is no fancy idea, for were you to go into our mailing rooms you would see the *American Agriculturist* sent to all these places, an astonishing number to some of them, and that the very things that any one of you reads are read by other children in all these far off lands, and each one of you has something in common with all the rest. What I want to say to all of you, new and old, and wherever you may be, that your letters to "The Doctor" are always welcome. If you know anything that pleases or interests you, you should let all the rest know it; or what is the next best thing if you

WANT TO KNOW ABOUT SOMETHING

you must write to "The Doctor," and if I can't tell you, I will find some one who can. In this way all the members of this big family can help one another....I have a pretty good budget of letters this month, but it is not so large as I am sure it will be, when the new comers learn that I expect to hear from them....A large share of the letters, this time, are about matters that need too long an answer to be given here, and I must try to take care of them in another way Here is one from a

LITTLE VIRGINIA GARDENER,

and a girl too. That boy Wat. smiles at the idea of a girl having a garden, but if all the boys were like him, there would not be any gardening done, unless the girls did it. Miss Emma thinks a great deal of her Virginia home; her father has given her a quarter of an acre of land to cultivate for herself. She tells what she has raised in it, but she is like many older gardeners, greatly troubled with weeds. A grass that she calls "Wire grass," which is kept down in the fields by the plow, but in her garden, though she tried hard to kill it, it is too much for her. Thinking that "The Doctor" must know everything, she writes for me to help her out of her trouble. There are some things that I know, and some that I do not know. One of those I do not know is, what she means by "Wire grass," as it is a name given to different plants; one of them was pictured last month on page 20, but it cannot, I think, be that. If she can find a piece, with the flower-head or seed, and send it to me, I can then know what she is talking about. Emma is troubled by this grass, but there is a greater trouble that she does not mention—she has too much land. If she can get her father to take back two-thirds or three fourths of the land, she will then have all that a girl of eleven can take proper care of, and on a small piece (with proper care) she will get as much and not work so hard as on the larger one. Emma, let us all hear more about that garden ...Here is a "Farmer's Boy" in New York state who inquires about the

TWINING OF HOP-VINES.

He knows that with him hop-vines twine "with the sun," and he asks if the hops were planted south of the Equator "will climb in the same way around a pole; if they will, why? If not, why?"—I do not think that the geographical locality can make any difference, but when you ask me "why?" there comes the rub. When our "Farmer's Boy" gets older, he will find that there are a great many things the "why" of which cannot be explained. We can no more tell why a hop-vine climbs in one direction, and a bean vine climbs in another, than we can tell why they climb at all. We cannot see any good reason why the hop should not have a strong stem and stand without help, like the tree, which we use as a pole for it to climb upon. We know that all created things are made as they are, and endowed with certain faculties for a good purpose by One who looked upon his work "and saw that it was good," and though we can find out many things, and are continually learning more and more, yet in every case we come to a point where we must stop and say "God made it so."

CLIMBING PLANTS

of all kinds are most interesting things to study, and young persons who keep their eyes open can see many beautiful and curious things about them; they will find that all do not twine around the pole, like the hop, but that some climb by the help of their leaf-stalks, others by the aid of tendrils, those wire-like stems that you must have noticed in the grape-vine, the cucumber, and many other plants; and some climb by tiny roots that come out all along their stems and cling to the bark of trees or the rough surface of a wall. There are so many wonderful things about these plants that I will try and tell you about them when the growing season comes, and you can see them yourselves.....I get a great many letters from our youngsters, that would not interest the whole family, and such I answer by mail, and say nothing about them, but here is one from two of my boys away off in Honduras, who ask about

VISITING THE CENTENNIAL EXHIBITION.

If it were merely a question if it would pay them to come, could they do so as well as not, I could say *yes* at once, but the case is not so simple as that. They ask how they can put a certain sum of money to the best use, whether by coming to the Centennial, or by staying at home, and using it in improving their education there. It is a very difficult matter to give advice in this case, for it has two important sides. I'll think on it.

A Doll Show!

Only think of a Doll Show! That is what the English children have had to amuse them lately. It was held at Alexandra Palace, in London, which is a great show place, something like the Crystal Palace. There were all

kinds of dolls, those which could walk, and those which could "squawk,"—though it is called talking—and those which could move their eyes, and do everything that dolls could be made to do by machinery and clock-work. Then, besides, these shop dolls, made to sell, there were home-made dolls, and doll's-dresses made by children, and ever so many prizes for the best dressed dolls. There were many old folks, and as you may suppose, a great crowd of young folks to see the show.

Every one of the *American Agriculturist's* little girls no doubt wishes she could have seen all this too. We wish we could have seen it, but we wish more that we could have seen the children who saw it. What a lot of wide open eyes and pleased faces there must have been, and better worth seeing than all the dolls. There was one thing very wonderful about this show. There were princesses and duchesses, and others with titles there, but that is not wonderful, for they are only women. The wonderful thing is the way in which we came to know that such a show had taken place. We had known that it was to be held, but away under the sea, far down in the deep ocean, where the wire cable stretches for thousands of miles, there came from London to New York on New Year's day the message

"The Doll Show at Alexandra Palace is a great success."

That is what we call wonderful, and we don't think that any dolls ever before had a message sent about them by ocean cable. If those dolls could feel, wouldn't they be proud to know that this message was sent and printed in the New York papers! But there is something better than all this about the show. The dolls and dolls' clothes made and sent by the children for the prizes, are afterwards to be distributed among the sick children at the childrens' hospitals. Wonderful dolls these, that could make the children happy in making and dressing them, could make the crowd of children happy who went to see them—and then the greatest of all, could carry happiness to hundreds of sick, weak, and suffering children! Who says that there is no good in dolls!

Aunt Sue's Chats.

Directions for "Spatter-Work."

Provide yourself with an old tooth-brush, a fine tooth-comb, and some India-ink, which must be carefully rubbed up with a little water on a saucer; though purple

Fig. 1.—A SPATTER-WORK TIDY.

ink, or almost any coloring matter will answer your purpose. (If, however, you use purple ink, you had better have some alcohol at hand to take off *misplaced* "spatters" on hands or clothing.) Spread an old newspaper on the table, place your blank card, paper, or muslin, upon it. Now arrange the ferns and leaves in a graceful position, and stick fine pins or needles through them on to the card, to keep them in position. Use plenty of pins, if they are so fine that they won't deface the card. Dip the brush into some water, and shake it well, slapping it on to a paper or rag, as it must not be too wet. Pour into a butter-plate, or saucer, a little purple ink, or whatever coloring matter with which you have provided

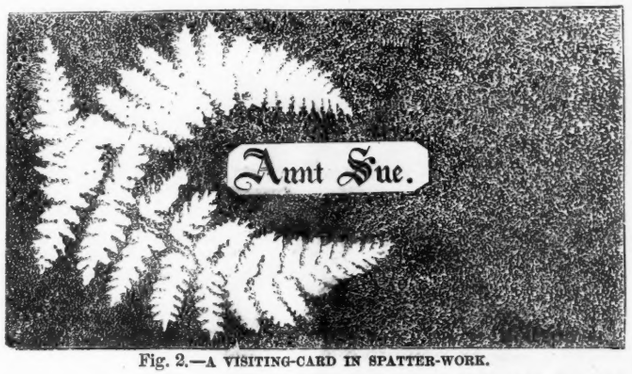


Fig. 2.—A VISITING-CARD IN SPATTER-WORK.

yourself, and take some of it up upon your brush. Take the brush in your right hand, and the comb in your left; hold the brush steadily over the card, about two inches off—and draw the comb, across the bristles, *towards* you. You had better try it upon some waste paper before splashing your card, as it requires a little practice and experience to spatter just right. Should the brush be too wet, the spots would be too large and so spoil the effect. You will soon, with a little care, acquire dexterity, and can easily make pretty ornamental articles—Swiss muslin tidies (fig. 1), lamp-shades, card-racks, fans, catch-alls, and even pillow-shams and window-shades, with elegant designs in "spatter-work." A very graceful, pretty visiting-card (fig. 2) may be made, by pinning a small piece of blank paper (large enough upon which to write your name) upon the card, either at one side, or in the center, and arranging the ferns tastefully about it, then splattering it. Names, mottoes, and initials, may be added by having ornamental (or plain) letters cut out in paper, and pinning them on in their places.

Thanks for puzzles, answers, letters, etc., to Norman E. Clark, Walter D. T., Effie, Mrs. G., Mark A., Franklin, O. O., Alice, Sallie F. Y., Geo. W. B., Isola, and Frank H. N.

S. S. S.—I presume that the "swarm of bees," to which you refer, is the following:

"B patient, B prayerful, B humble, B mild,
B wise as a Solon, B meek as a child.
B studious, B thoughtful, B loving, B kind,
B sure you make matter subservient to mind.
B cautious, B prudent, B trustful, B true;
B courteous to all men, B friendly with few.
B temperate in argument, pleasure and wine;
B careful of conduct, of money, of time.
B cheerful, B grateful, B hopeful, B firm;
B peaceful, B-nevolent, willing to learn;
B punctual, B gentle, B liberal, B just,
B aspiring, B humble, *because* thou are dust;
B penitent, circumspect, sound in the faith,
B active, devoted, B faithful till death;
B honest, B holy, transparent, and pure,
B dependent, B Christ-like, and you'll B secure."

G. F. W.—A "palindrome" is a line that reads alike backward and forward. Adam's first observation to Eve (?) was one—"Madam, I'm Adam"; and Napoleon's answer, when asked if he could have sacked London, is another—"Able was I ere I saw Elba."

SALLIE says some one has given her an anagram, "New door," to make one word of, and she can't do it. Bless your little heart, it is *a catch!* Take the letters forming "NEW DOOR," and see if you cannot transpose them into "ONE WORD." The "window that a star is like"—is *a skylight.*

Aunt Sue's Puzzle-Box.

ANAGRAMS.

1. Pa eat prim ox.
2. Farm's onion tarts.
3. Can vail story.
4. Rep's rag-shop.
5. Beggar in red.
6. Expire my all.
7. At Rose so shy.
8. A united clam.
9. No rat inlet.
10. O! I start gloss.

SQUARE WORDS.

Square the words "WHEN" and "WHOM."

GILES FARMIN.

TRANSPOSITION.

(Fill the blanks in the following puzzle with a word and its transpositions.)

An —— woman with —— intent,
Put on her —— and ont she went:
"——" she said "Oh! give, I pray,
Some bread that I may —— this day." G. C. W.

CROSS WORD.

My first is in chapter but not in verse,
My next is in children but not in nurse,
My third is in eagle but not in parrot,
My fourth is in gin but not in claret,
My fifth is in lion but not in lamb,
My sixth is in veal but not in ham,
My seventh is in trade but not in a buy,
My eight is in June but not in July,
My ninth is in night but not in day,
My tenth is in mire but not in clay,
My eleventh is in cousin but not in niece,
My twelfth is in whole but not in piece,
My thirteenth is is kindness but not in scold,
And my whole, if obeyed, is more precious than gold.

AMBROSE M. S.

PI.

Het cheatusom dan oegate wree stirf rown ni Sinpa, ot stinghisdui hiscirtsan form roome, hist begin sa nylear het from fo het scors sa het debar anc eb tuc.

NUMERICAL ENIGMA.

I am composed of 12 letters:
My 1, 9, 12, is a bird.
My 11, 7, 4, is a place of refuge.
My 5, 2, 3, 8, is a conveyance.
My 1, 6, 10, is what every person has.
My whole is the name of a popular story.

HUMPTY DUMPTY.

HOMONYMOUS WORDS.—(*Having similar sound.*)

1. Of man or woman's dress a part:
   Or passion strong will quickly start.
2. With this no lack of number fear:
   Or something pleasant to the ear.
3. Part of a church I here disclose;
   No faith in this man's word repose.
4. A ring of wood or metal made:
   Or sound preceding bloody raid.
5. Withered, without one trace of green:
   Or one who many things has seen.
6. A garment made of spotless white;
   While this remains we're in good plight.

HENRY.

CHARACTERISTIC INITIALS.

1. Finest Of Crayon Delineators. 2. Come Listen Kate. 3. Joined Battle. 4. Forcible Declaimer. 5. Devoted Backwoodsman. A. SAVINNE.

CONCEALED PROVERB.

Oliver, give me your hand, your little toes are so lively, I am afraid you will fall.

BISECTED AMERICAN CITIES.

1. Just made, and a boat. 2. An adjective and a measure. 3. An animal and a place for crossing rivers. 4. A harbor, and the farmer's bank. 5. A measure of time, and a measure of weight. 6. A peculiar wheel, and a home of wild beasts. 7. An instrument for fastening, and a harbor. 8. A worker in metals, and a piece of land. ISOLA.

ALPHABETICAL ARITHMETIC.

EDD) W C K B D K D (COW
W W C I
I W E D
W D Y O
K E O K
K E I O
E D D
E D D W. S. N.

DIAMOND PUZZLE.

1. Part of a map. 2. A cape of North America. 3. A county of Kentucky. 4. A city of England. 5. A town of Ecuador. 6. A sea of Asia. 7. A New England state. 8. A town of France. 9. A town of North America. 10. A country of Africa. 11. A country of Southern Africa. 12. The goddess of mischief. 13. Part of a house.

The central letters, perpendicular and horizontal, form a New England state. R. D. GAGE.

DOUBLE ACROSTIC.

1. Proud. 2. An oriental country. 3. An article of wearing apparel. 4. A city in Canada. 5. A greasy substance. 6. Anger. 7. A part of the United States. 8. Once more.—The initials give the name of a Queen, the finals the name of an Emperor. ALBERT & AUGUSTA.

ANSWERS TO PUZZLES IN THE DECEMBER NUMBER.

ANAGRAMS OF SHAKESPEARE'S CHARACTERS.—1. Touchstone. 2. Poor Yorick. 3. Caliban. 4. Miranda. 5. Cleopatra. 6. Cardinal Woolsey. 7. The Ghost. 8. Lady Macbeth. 9. King Lear. 10. Dogberry.

NUMERICAL ENIGMAS.—1. Trailing Arbutus. 2. Constantinople.

DOUBLE ACROSTIC.—C— al —F
L— eve —L
A— lapac —A
R— eadin —G
I— gnobl —E
O— tseg —O
N—athanic—L
E— rnin —E
T— enan —T

DECAPITATIONS.—1. Madam, Adam. 2. Part, art. 3. Please, lease. 4. Alone, lone.

CONCEALED BIRDS.—1. Macaw. 2. Auk. 3. Emu. 4. Dove. 5. Lory. 6. Lark. 7. Kite. 8. Wren.

SQUARE WORD.—E R R O R
R O O M Y
R O B E D
O M E G A
R Y D A L

CHARADE.—Incognito (inn—cog—nigh—toe).

PUZZLE.—Sea of Azof (from Nyanza and Fondulac).

TRANSPOSITIONS.—1. Bleat, table. 2. Stage, gates. 3. Lemons, melons. 4. Snake, sneak. 5. Warden, Andrew, Wander. 6. Auction, caution.

POSITIVES AND COMPARATIVES.—1. Seize, Cæsar. 2. Past, pastor. 3. Wand, wander. 4. Badge, badger. 5. Sea, seer. 6. Eye, ire. 7. Gross, grocer.

Send communications intended for Aunt Sue, to Box 111, *P. O., Brooklyn, N. Y.,* and *not* to 245 Broadway.

USEFUL AND USELESS DOGS.—A PRIZE FOR THE BOYS AND GIRLS.

If you young people ever look into the older people's part of the paper—as, I think, some of you do—you will sometimes find that dogs are spoken of as being very troublesome, and that we not long ago even published a trap for catching them, and you will no doubt wonder why I often speak well of dogs in the Boys' and Girls' Columns, and they are given a bad name in the other columns. The fact is, there are different kinds of dogs, just as there are different kinds of people. Some men are so bad and unlovely, that it is sometimes better for them to be shut up, to prevent them from doing harm to others, and it is no more fair to judge all men from the bad acts of these few, than it is to consider all dogs are useless because some are so. Probably many of you, especially those who live in the country, think it would be very lonesome were it not for the family dog, who is always ready to go with you, and always on the lookout to see that nothing goes wrong. It is true that there are some dogs which are good for nothing, but you are sure that *your* dog doesn't belong to that class. These bad dogs usually have no particular home, or if they have one, it is among people who keep him half starved, and do not care whether he stays at home, or is running about and doing mischief. When dogs are talked about in your part of the paper, good dogs are meant, those family dogs that stay at home, and mind their business. If people will keep dogs of another kind, which roam about the country, killing sheep and lambs, and doing other mischief, they must pay for the damage that these curs—I will not call them dogs—may do. Because some dogs are bad, it will not do to say that no dog is of any use. An intelligent dog is often of much use. One of my neighbors had a dog, which seemed to know so much that I thought it a great pity he could not speak. He could do almost everything but speak. One evening the dog came to the house, and scratched at the door; the door was opened, but Tip—that was his name, but he was sometimes called Tipper or Tippecanoe "for short"—instead of coming into the house, ran off: the door was closed, but soon after there was a scratching again, and when the door was opened, Tip pulled at his master's clothing, and looked out, as if he would say, "come along." The dog was so much in earnest, that his master followed him, as Tip went bounding toward the stable, leading the way. When he reached the stable, Mr. F. found that in some way one of his horses had got into trouble, and had fallen with his head through some bars in the stall, in such a manner that he would likely have died before morning, had not Tip seen that something was wrong, and called for help....Here is a picture of a dog, which is given in part for the reason that it is one of Mr. Harrison Wier's best, and in part for another reason. Mr. Wier is famous for drawing animals, and the best pictures in the English journals for boys and girls are by him. There are many artists who can draw dogs and other animals, but there are few who can put so much life into them. Look at this dog, as he hurries back on his errand! Every one can see that, as the boys say, he is "full of go"! You know that he is on business, and he is giving his whole attention to it; I have seen boys do errands, and not be half so lively about it. Some dogs are quite useful in this way, and can be very easily taught to fetch and carry in a most wonderful manner. Many years ago, when I lived in the city, a neighbor had a dog which went every morning to the news-stand, two or three blocks off, got his master's paper, and took it home, as carefully as either of you could; sometimes other dogs would come up to him, but he was on business, and would only notice them by a growl, as if to say, "just wait until I get this paper home, and I will attend to you."....Now for the other reason for giving this picture. It is a long time since we have had any prizes. The last time I offered a prize there was too much of it; and it took more time than I could spare; now let us see if we can not have a good time over a very simple prize-question. You see that the dog in the picture is on an errand; I have told you about another dog that went on an errand for a newspaper; no doubt many of you own, or know of dogs, who do, or have done, similar things. Now then, I wish some stories of these dogs, which have been useful in this way, that have been taught to go on errands for their master. They must be true stories, such as you know to be true yourselves, or that your parents know to be true—only in this case the stories must be told by yourself in your own way. Some of the best stories it is very likely will be printed. Now to make it interesting, I propose some little prizes. A book for the best story by a boy and a girl between 12 and 16 years old; and one for the best by a boy and a girl 12 years old and under; that will make four books, two for the boys, and two for the girls; the books, of course, to be good and new ones, and suitable for young people of those ages. *Mind the conditions*, which are: the stories are to be written by yourselves, and true, as above stated; they must not be longer than two pages of letter paper, and would be better, if shorter; they must be written with black ink—my old eyes can not bother with fancy-colored inks, or lead-pencil; they must reach me by March 15th next, and must be directed to "The Doctor," 245 Broadway, New York City. I was about to add another condition, but I will put it in the form of a hint. When you write for a prize in this way, do not set your mind upon getting it, and feel unhappy, and think something has gone wrong, because you failed. Recollect there are hundreds of others who are trying, and only a few can be the winners. In giving prizes in former years, I have selected those, the very trial for which would be useful, and though this is not so instructive as some former ones, the writing out of a story as well as you can, will be a good exercise, and worth doing for itself. The awards in this, as well as in former cases, will be left to persons, who will only judge the stories on their merits. Now I think that, unless boys or girls can write without feeling unpleasantly because they did not get the prize, they had better not try, for in our large family of little folks we want every one to be happy and contented.

THE DOCTOR.

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TESTIMONIALS.

NEW YORK, *Dec. 22d*, 1875.

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Respectfully, ORANGE JUDD.

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Any size Expressed C. O. D. Send for price-list. Correspondence Solicited.

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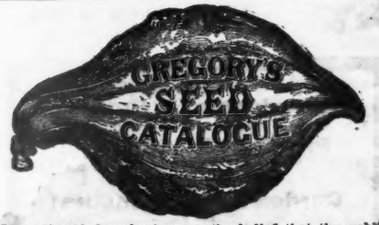

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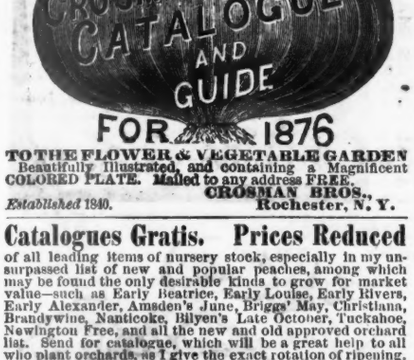

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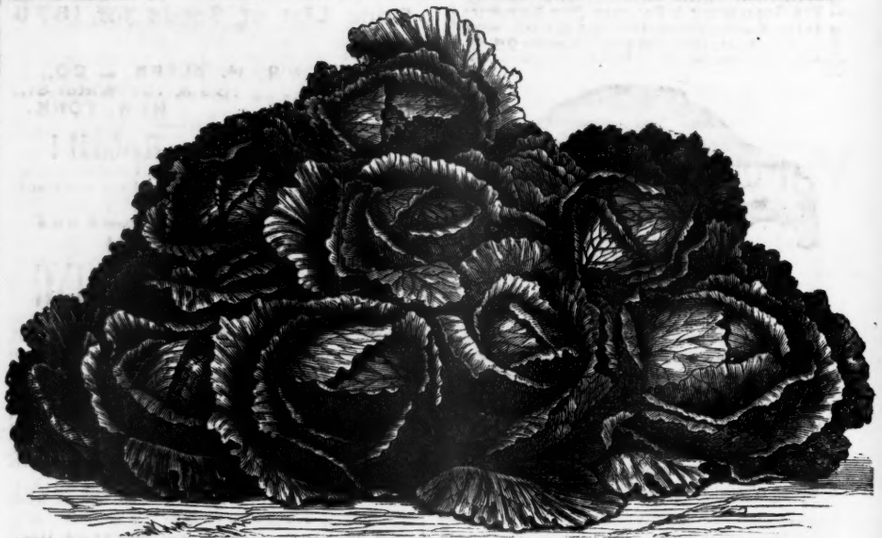

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N. B.

Read and carefully Note the following Items: (*a*) All subscribers sent by one person count, though from several different Post-offices. But....(*b*) Tell us with each name or list of names sent, that it is for a premium ...(*c*) *Send the names as fast as obtained*, that the subscribers may begin to receive the paper at once. You can have any time you wish up to next July, to complete your list....(*d*) Send the exact money with each list of names, so that there may be no confusion of money accounts....(*e*) Old and new subscribers all count in premium clubs, but a portion, at least, should be new names ; it is partly to get these that we offer premiums to canvassers....(*f*) Specimen Numbers, etc., will be supplied free, as *needed* by canvassers, (when 4 cents per copy is furnished to pre-pay postage), but they should be used carefully and economically, and where they will *tell*....(*g*) Remit money in Checks on New York Banks or Bankers, payable to order of Orange Judd Company, or send Post-office Money Orders. If neither of these is obtainable, Register Money Letters, affixing stamps both for the postage and registry ; put in the money and seal the letter in the presence of the Post-master, and take his receipt for it. Money sent in any of the above ways is at *our* risk ; otherwise it is not.

Table of Premiums.

[In the following table is given the price of each article, and the number of subscribers required to get it *free*, at the regular rates of $1.60 a year, and also at the club rates of $1.10 a year, postage included, which is prepaid in all cases *by the Publishers*.]

TABLE of Premiums and Terms For Volume 35—(1876).

Open to all—No Competition.

No.	Names of Premium Articles.	Price of Premiums	Number of Subscribers required at $1.60	Number of Subscribers required at 1.10
1	*Boy's Wagon (C. W. F. Dare)*	$ 6 00	15	45
2	*Case of Scissors (U.S. Steel Shear Co.)*	$ 4 00	10	31
3	*Pair of Skates (Patterson Bros.)*	$ 3 50	8	30
4	*Bat and Ball (E. I. Horsman)*	$ 2 50	7	27
5	*Improved Table Croquet (do. do.)*	$ 3 00	8	30
6	*Child's Carriage.....(C.W. F. Dare)*	$20 00	30	102
7	*Child's Self-operating Swing (do. do.)*	$ 4 00	9	32
8	*Doll's Cottage Chamber Set (do. do.)*	$ 5 00	12	37
9	*Crandall's Building Blocks*	$ 2 00	5	20
10	*Crandall's Masquerade Blocks*	$ 1 00	3	....
11	*Crandall's* **Acrobats**	$ 1 00	3	....
12	*Crandall's* **Menagerie**	$ 2 00	5	....
13	*Utility Adj. Table (Lambie & Sargent)*	$ 8 00	16	20
14	*Pocket Tool Holder (Miller's Falls Co.)*	$ 1 00	3	52
15	*Bracket Saw (do. do.)*	$ 1 25	4	....
16	*Payson's Indelible Ink—Pen, etc.*	75	3	....
17	*"Peoples' Pump" (W. S. Hunt)*	$12 00	19	65
18	*Tea Set (Lucius Hart Man'fact'g Co.)*	$30 00	66	225
19	*Ice Pitcher (do. do. do.)*	$16 00	24	80
20	*Casters (do. do. do.)*	$ 9 00	17	54
21	*Cake Basket (do. do. do.)*	$12 00	19	65
22	*Revolving Butter Cooler(do. do.)*	$ 8 00	16	52
23	*One Dozen Teaspoons (do. do.)*	$ 6 00	15	45
24	*One Dozen Tablespoons(do. do.)*	$12 00	19	65
25	*One Dozen Table Forks(do. do.)*	$12 00	19	65
26	*Child's Cup (do. do.)*	$ 2 75	7	27
27	*Child's Knife, Fork & Spoon (do.)*	$ 5 00	12	37
28	*Moore's Floral Set (Moore Man'f'g Co)*	$ 1 00	3	....
29	*Excelsior Pocket Microscope (Vulcanite Optical Instrument Co.)*	$ 2 75	7	27
30	*Abbott Pocket Microscope (L.G.Abbott)*	$ 1 50	4	....
31	*Four," Pocket Soap-Bubble Toy" (Bliss)*	$ 1 00	3	....
32	*Turn-table Apple Parer (D.H.Goodell)*	$ 1 00	3	....
33	*Climax Apple Corer & Slicer (do.)*	$ 1 00	3	....
34	*Family Cherry Stoner (do.)*	$ 1 00	3	....
35	*Knives and Forks (Patterson Bros.)*	$14 25	21	70
36	*Knives and Forks (do. do.)*	$18 00	27	92
37	*Carver and Fork (do. do.)*	$ 4 00	10	34
38	*French Cook's Knife, Fork, and Steel*	$ 4 00	10	34
39	*Pocket Knife (Meriden Cutlery Co.)*	$ 1 50	4	....
40	*Pocket Knife (do. do.)*	$ 2 00	6	22
41	*Pocket Knife (do. do.)*	$ 2 75	7	27
42	*Ladies' Pocket Knife (do. do.)*	$ 2 00	6	22
43	*Multum in Parvo Knife (do. do.)*	$ 3 50	8	30
44	*Garden Seeds& Flower Bulbs(select'n)*	$ 2 00	6	22
45	*Sewing Machine (Remington)*	$70 00	80	208
46	*Beckwith Portable Family Sew'g Mach*	$20 00	30	100
47	*Lamb's Family Knitting Machine*	$55 00	68	230
48	*Washing Machine (Doty's)*	$14 00	21	70
49	*Clothes Wringer (Best—Universal)*	$ 8 00	16	52
50	*"Always Handy" Stove Shelves (American M'f'g Co.)*	$ 3 00	8	30
51	*Pat. Magic Bellhead Pencil (Ludden & Taylor)*	$ 1 50	4	....
52	*Ladies' Magic Charm Pencil (do. do.).*	$ 2 00	5	20
53	*Gents' Magic Charm Pencil (do. do.).*	$ 3 00	8	30
54	*Gold Pen, Telescopic Case (do. do.).*	$ 2 50	7	27
55	*Gold Pen and Pencil, Telescopic Case, Elegant (do. do.)*	$ 5-50	13	37
56	*Melodeon, 4-oct'e (G. A. Prince & Co.'s).*	$90 00	105	320
57	*Piano, Splendid 7-oct.(Steinway & So's)*	$650 00	625	1680
58	*Silver Watch (American Watch Co.)*	$40 00	50	165
59	*Breech-loading Pocket Rifle*	$16 00	24	80
60	*Creedmoor Long Range Rifle (E. Remington & Sons)*	$100 00	110	330
61	*Target Rifle (E. Remington & Sons)...*	$56 00	68	230
62	*Sporting & Hunting Rifle (do. do.)..*	$32 00	48	156
63	*Double Barreled Breech-loading Gun (E. Remington & Sons)*	$50 00	66	225
64	*Charles Pratt's Astral Oil (1 can, 5gal.)*	$ 2 85	7	27
65	*Planet Jr. Combined Drill & Hoe (S. L. Allen & Co.)*	$15 00	22	75
66	*Cahoon's Broadcast Seed-sower*	$10 00	18	58
67	*Family Scales (Fairbanks & Co.)*	$14 00	21	70
68	*Worcester's Great Illust'd Dictionary*	$10 00	18	58
69	*Any back Volume Agriculturist*	$ 1 75	.....	20
70	*Any Two Back Volumes do.*	$ 3 50	.....	29
71	*Any Three do. do. do.*	$ 5 25	13	37
72	*Any Four do. do. do.*	$ 7 00	15	47
73	*Any Five do. do. do.*	$ 8 75	17	54
74	*Any Six do. do. do.*	$10 50	19	61
75	*Any Seven do. do. do.*	$12 25	21	68
76	*Any Eight do. do. do.*	$14 00	23	74
	—(Each add'l Vol. at same rate.)		.....	.....
77	*—Nineteen Vols. XVI to XXXIV.*	$33 25	44	153
78	*Any Back Vol. Agriculturist*	$ 2 50	.....	24
79	*Any Two Back Volumes do.*	$ 5 00	.....	36
80	*Any Three do. do. do.*	$ 7 50	16	48
81	*Any Four do. do. do.*	$10 00	18	60
82	*Any Five do. do. do.*	$12 50	21	71
83	*Any Six do. do. do.*	$15 00	24	82
84	*Any Seven do. do. do.*	$17 50	27	92
85	*Any Eight do. do. do.*	$20 00	30	102
	—(Each ad'l volume at same rate)		.....	.....
86	*—Nineteen Vols. XVI to XXXIV.*	$47 50	65	215
87	*—A* **$10** *Library (Your Choice.)*	$10 00	18	58
88	*—A* **$15** *Library do.*	$15 00	24	85
89	*—A* **$20** *Library do.*	$20 00	31	106
90	*—A* **$25** *Library do.*	$25 00	38	125
91	*—A* **$30** *Library do.*	$30 00	44	144
92	*—A* **$35** *Library do.*	$35 00	50	162
93	*—A* **$40** *Library do.*	$40 00	56	177
94	*—A* **$45** *Library do.*	$45 00	62	192
95	*—A* **$50** *Library do.*	$50 00	68	207
96	*—A* **$60** *Library do.*	$60 00	80	237
97	*—A* **$75** *Library do.*	$75 00	100	282
98	*—A* **$100** *Library do.*	100 00	125	360
99	*—A Choice of Good Books. (See Description)*		.....	.....

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☞ *Every Premium article is* **new** *and of the very* **best** *manufacture. No charge is made for packing or boxing any article in our Premium List. The Premiums,* **Nos. 2, 9 to 11, 14 to 16, 29 to 31, 39 to 44, 51 to 55, 69 to 99,** *inclusive, will each be delivered* **FREE** *of all charges, by mail or express (at the Post-office or express office nearest the recipient) to any place in the United States or Territories.—The other articles cost the recipient only the freight after leaving the manufactory of each, by any conveyance desired. An* **Illustrated Descriptive List of Premiums** *named in the above Table will be sent* **Free** *to applicants.*

containing a great variety of Items, including many good Hints and Suggestions which we throw into smaller type and condensed form, for want of space elsewhere.

Continued from p. 47.

"Ivory Wheat."—"F. E.," McConnell, Pa. We only know about this so-called "wheat" from the advertisement, from which we infer that it is not *wheat* at all, *i. e.*, the grain, *Triticum*, generally known as wheat. Its coming from Africa, the small size of the seeds, and other hints given in the advertisment, make us *guess* that it is one of the forms of *Sorghum*, cultivated in various eastern countries, and which in Africa furnishes a large share of the food of the natives. It has been introduced occasionally under various names, these past 50 years. It may have its uses—only it isn't *wheat*.

A Triple Hazel Nut is sent by E. H. Brown, Pike Co., Ind., in which three nuts are firmly joined or, as it were, fused together. Such departures from the usual form are always interesting, and they are sometimes very instructive.

Spiders.—The Boston Society of Natural History, publishes much valuable scientific matter in its regular "Proceedings," and it adds to its usefulness by printing in its "Occasional Papers" memoirs, which would not otherwise get into type. It has done a good work in producing the writings of the late Prof. N. M. Hentz, on North American Spiders. No branch of our natural history has been so little studied, as that which relates to spiders, and mainly for the want of books to aid the student, a want which this publication will do much to remove.

Hay Racks—Faulty Addresses.—"R. H. W." asks for a reply by mail to a question in regard to hay racks. He gives no address. This is only one of many such cases. We are willing to accommodate our friends to any reasonable extent, but it is not reasonable to expect a reply "by return mail," unless the full address—*post-office, county, and state*—is given. Several other correspondents, who may feel neglected because they receive no reply, will please accept this as the reason. We shall endeavor to give information about hay racks in season for the haying.

Failure in Growing Parsnips.—"J. J. L.," Crisfield, Md. Parsnips flourish best in a cool climate, and the heat of our climate will cause them to degenerate. There is no manure better for them than that from cow stables, and a dressing of salt is useful. The hardness of heart, with which those in question were affected, may be due to a check to the growth by a drouth, or you may need a change of seed.

Spaying Heifers.—"N. R. D.," Cheyenne, Wyoming Territory, informs us that he has succeeded in spaying 300 heifers without loss. His purpose is to raise them for beef. The profit of the operation is considerable, as the dressed weight of a Texan cow is 400 pounds, while that of a steer is 600, and the dressed weight of a spayed cow is expected to reach that of a steer. When the operation is properly performed, the risk in spaying a heifer is no more than that in castrating a bull calf.

Draining with Tiles.—"J. M. S.," Vermillion Co., Ill. Water should not enter tile ditches, except through the soil. If the head of the drain opens into a swale, the inlet should be protected by a wire netting or gauze cap, which will not admit any solid or floating matter. It would be safe to have also a filter of gravel to cover the inlet.

Cows for a Cheese Dairy.—"P. B.," Boonville, N. Y. The most profitable cow for a cheese dairy is a large-bodied animal that yields a large mess of milk, not very rich in cream, and that has the cream well mingled with the milk, and slow to rise. The Short-horn meets these requirements more nearly than any other cow, and this breed is coming into favor more and more with cheese dairymen. The Jersey is too small, and yields too little milk for cheese making, except for a very rich cream cheese. The well-known dairyman, Harris Lewis, of Herkimer Co., N. Y., is raising a herd of Short-horns specially for his dairy.

Improvement in Cotton Manufacture.—F. E. Whitfield, Senr., of Corinth, Miss., writes that his mill, in which the "Clement attachment" for cleaning cotton is in operation, has been started and

at work for the past few months with perfect satisfaction. This attachment takes the seed-cotton from the field, separates it from the seed, and cleans it from trash, and renders ginning unnecessary. Mr. Whitfield says that nearly three-fourths of all the buildings, motive power, machinery, and operatives, needed to convert seed-cotton into yarn by the ordinary process, are saved by this improvement. He invites all those interested in introducing cotton manufacture into the cotton fields, to examine his mill, and the new process in operation in it.

To Treat Broom Sedge and Sprout Land.—"W. B. D.," Benton, Tenn. If the soil in question is in pretty good heart, or can be manured, we would plow the sod not more than three inches deep in June, and let it lie two or three weeks, when it should be harrowed thoroughly. The harrowing should be repeated as soon as the weeds appear on the surface, until next September, when we would sow a bushel and a half of wheat per acre, spread what fine manure can be procured, and cover both seed and manure with a light furrow of not over three inches in depth. If possible, we would roll the ground, but do no more.

Grapes and Wine.—"W. H. R.," of Dorchester Co., Md., asks if grape-growing and wine making on a large scale, could be made profitable in northern New York and Vermont. This is a question that can not be readily answered, as localities in which grapes may be profitably grown, are very restricted. In the best grape districts in New York state, the difference between the two sides of a hill makes all the difference between success and failure. There may possibly be spots in both northern New York and in Vermont, where the conditions are all favorable, while half a mile away, grape culture is not possible. It is not possible to answer such general questions yes or no, but the places named are not the localities towards which we should, did we propose to, set a vineyard.

Lucern, (Alfalfa), in Virginia.—"J. D. S.," Bull's Valley, Va. What you call "alfalfa clover," is properly lucern, and not clover. Alfalfa is the South American name which was introduced with this plant into California from Chili. Lucern is a valuable forage plant, and will thrive well in Virginia, and over nearly the whole of the United States. It loves a deep, dry, rich limestone soil, and will yield good crops for several years, if occasionally manured. It is being largely cultivated in California for forage for horses, cattle, and sheep.

Among the Coal Mines.—J. Paynter, who is a coal miner in Trumbull Co., Ohio, says that when people wonder what he does with the *American Agriculturist*, he points to the largest crop of onions ever raised in his neighborhood: 37 bushels and one peck, on a bed 40 by 15 feet, and says "That is what I have done with the *American Agriculturist*." Or he shows 110 bushels of corn to the acre, as another proof of the use of the *American Agriculturist*. Our friend Paynter thinks if he could write, he would send us something frequently, and we would say to him, and to all others who think that they can not write well enough for publication, that the manner is of secondary importance. If you have facts or experiences, tell them in your own way, and we will manage to find them. We have not near so much difficulty with such letters as this of our correspondent, as we do with those of elegant penmen who make writing-school flourishes, and when Mr. P. writes of the *American Agriculturist*, "I hope I shall get it as long as I live, and that my children will take it after me," it is not only very plain and easily read, but very pleasant reading.

Chemical Fertilizers.—"J. D. S.," Va. For the convenience of those who so frequently enquire about artificial fertilizers, we now have regular price-lists in our market reports from month to month. These are the wholesale prices, which are always a little lower than those for small quantities. Quantities of 10 tons, can be obtained at the very lowest prices. Thus it will be an object for neighboring farmers who need fertilizers for their spring crops, to join in purchasing their supplies in one large lot.

How to Make Good Butter.—"F. B. S.," Baltimore, Md. To tell how to make good butter, is too long a story, and it has often been told in detail. There are a few golden rules that must be observed, which will meet every case, and will bear repeating. (1st.) Keep only those cows that yield butter of good color, flavor, and texture.—There are some cows from which *no one* can get good butter. (2nd.) Feed only good, sweet food, the best for butter being early cut timothy and clover hay, and corn-meal, and give only pure water. (3d.) Observe the most scrupulous cleanliness in the stable and dairy. (4th.) Keep the cows in good health and contented. (5th.) Use a churn that brings the butter in 30 minutes. (6th.) Keep the temperature of the milk and cream as near to 60 degrees as possible, and churn the cream when only slightly sour. (7th.) Work the butter-milk out of the butter with the ladle, and not with the hands; if water is used it should be pure and cold; the butter should be gashed or cut in working, not "plastered" or flattened out. (8th.) One ounce of pure dairy salt should be used for each pound of butter, at two workings, with an interval of twelve hours between the workings, (for immediate use many prefer less salt). (9th.) Pack at once in a sweet clean oak firkin or pail, and cover with a layer of salt until the next packing is laid down; when the firkin is filled, it should be headed up air tight, and set away in a cool, dry, sweet cellar. The rest will be learned by experience.

The American Naturalist, which was published at a loss in Salem, is now issued by Houghton & Co., Boston. This journal might have been a success, had it been popular, and we are glad to see that the January number shows a decided improvement in this direction. Long technical articles, of interest to only a few specialists in science, should appear in the "Transactions" of the different Societies. What is needed is a journal for the unscientific, who have a fondness for, and would like to learn about natural objects. If the "Naturalist" supplies this want, it will succeed.

An Egg-bound Hen.—"J. H. M.," Mariners Harbor, S. I., has shown us a number of abortive eggs taken from the uterine passage of a hen in preparing it for the table. The eggs were masses of solidified yolk and membranes, without albumen or shells. This was clearly a case of "egg-bound," and must have finally destroyed the hen. It might probably have been discovered by noticing the condition of the hen, and examining the abdomen, when the hard masses would have been observed. The remedy would have been to inject some linseed oil into the passage, and by dilating it with the fingers, remove the collected matter. The trouble was doubtless from over-feeding with stimulating food.

Cement Roof.—"R. W. S.," Pike Co., Pa. A cement roof needs to be laid with a close boarding beneath it, and a depth of two inches of cement is sufficient. A coat of hot gas tar may be laid upon the cement, which will make it water-proof. The slope need not be more than an inch to the yard.

The Large Essex Pig.—"R. S. W.," Watsonville, Mich., who raised the Essex pig which dressed 570 lbs., and mentioned in the *American Agriculturist* recently, gives us the following particulars as to the age of the pig and the manner of feeding. The pig was 22 months old when slaughtered. He was placed in a pen for feeding on the 1st of June last, where he was fed milk and three ears of corn three times a day up to the 19th of Sept., when in addition he received a quart of dry shelled corn three times a day. When killed he was feeding well, and would have probably reached a considerably heavier weight. When cut up, the bones were found extremely hard, which explained how such small legs could support such a heavy weight of flesh.

Catalogues Received.

Our friends in the trade endeavor to have their catalogues ready on or shortly before Feb. 1st, and this prevents our giving the majority of them until our March number. As the list in that month is usually a heavy one, we give here those that have come to hand up to the day of going to press, January 15th. The names are given alphabetically.

SEEDSMEN.

Unless specially mentioned, the dealers keep vegetable, field, and flower seeds, gardening implements, and various horticultural appliances.

BEACH, SON, & Co., No. 7 Barclay St., New York, issue their catalogue in the "American Garden," now changed to a quarterly.

B. K. BLISS & SONS, No. 34 Barclay St., New York, accompany their catalogue with a Gardeners' Almanac, which contains a full calendar of operations.

D. M. FERRY & Co., Detroit, Mich. Through some accident this catalogue was overlooked last year until very late. We now notice it very early as one of the most complete and interesting of all.

J. A. FOOTE, Terre Haute, Ind., raises seeds, and has a specialty in his "100 Days Tomato."

JAMES J. H. GREGORY, Marblehead, Mass., sets forth his favorite cabbages and squashes; he has several novelties in vegetables, besides all the standard sorts.

HARVEY BROS., Buffalo, N. Y., send a very neat and well illustrated catalogue.

R. D. HAWLEY, Hartford, Conn., calls his catalogue the Centennial, and puts a fine Danvers onion on the title page. We wonder if friend H. intends any play upon words, and wishes us to see that he means "scent-ennial?" Mr. H. gives special attention to the genuine Wethersfield onion seed. Indeed he believes in Wethersfield, for one of the P. O. clerks stole his money letters and was sent to the state prison at W., which is said to be very *strong*.—A very full catalogue.

PETER HENDERSON & Co., No. 35 Cortlandt St., New York, issue a more ample catalogue even than usual, very neatly illustrated, and also an abridged list of "Everything for the Garden," including seeds, plants, fruits, etc.

KING & SAVAGE, Chicago, Ill., succeed to Jas. H. Morris, in the seed and implement business.

J. B. ROOT, Rockford, Ill., sends his Garden Manual and Seed Catalogue. Like that of last year, this gives really valuable instruction, and hints marked by practical common sense.

CHARLES SIZER, Mount Lebanon, Columbia Co., N. Y., sends his Shaker's Catalogue in a most unshakerly cover of blue and gold. The excellence of the seeds grown by the Shakers is generally admitted.

J. M. THORBURN & Co., No. 15 John St., issue as usual separate catalogues, one for vegetable and agricultural seeds, another for flower seeds, and still others for spring bulbs and tree seeds. Their catalogues announce that they offer $100 premiums, each, for the best collections of vegetables and of flowers exhibited at the Centennial from seeds purchased of them.

JAMES VICK, Rochester, N. Y., is a most uncertain man. No one knows what he will do next. He began with catalogues unlike those of any one else, and now he comes with a catalogue in the shape of a quarterly "Floral Guide," and more than this, he has a "Flower and Vegetable Garden." Both works are elegant, useful, and full of interesting matter, including not a little of Vick. He is so versatile that he sometimes "drops into poetry," pitches into Congress, writes notes of travel, and instructs his readers, and we trust, makes money.

FLORISTS.

PETER HENDERSON, 35 Cortlandt St., New York, and Jersey City Hights, N. J., sends the first florist's catalogue of the new year. It is embellished with a fine plate of the flowers of some of the new cannas and zonale geraniums in colors, and of course contains numerous "novelties."

NURSERYMEN.

DAVID BAIRD, Manaplan, Monmouth Co., N. J. A large assortment of peaches, with other fruits.

CHARLES BLACK, Hightstown, N. J., at the Village Nurseries, makes a specialty of peaches, and offers other stock.

A. M. BURNS, Manhattan, Kansas, has a general list of grapes and other small fruits, and the Burns Raspberry.

ROBERT DOUGLAS & SONS, Waukegan, Ill. Evergreen and Ornamental Tree Seedlings, and Tree Seeds. This establishment counts its stock by millions, and offers trees of various sizes at wonderfully low rates.

A. HANCE & SON, Red Bank, N. J., issue a special list of their small fruits, offering the Brandywine, Highland Hardy, and Canargua Raspberries as specialties.

E. W. HARRINGTON, Palmyra, N. Y., sends wholesale price-lists of the Palmyra Commercial Nursery.

R. S. JOHNSTON, Georgetown, Del., makes a specialty of peach-trees, and offers other stock.

C. K. KESLER, Bethany P. O., Tredell Co., N. C., offers general nursery stock at low prices.

TYRA MONTGOMERY, Mattoon, Ill. General nursery stock, with a special and full catalogue of Roses.

H. M. THOMPSON, St. Francis, Wis. Evergreen and deciduous forest-tree seedlings and tree seeds.

B. F. TRANSOU & BROTHER, Humboldt, Tenn., present their 26th annual catalogue, and are consequently no novices; they have various local fruits, besides a general stock.

JOHN WAMPLER, Carthage, Mo., has general nursery stock, and offers the Amsden peach.

EUROPEAN CATALOGUES.

ENGLAND.

ANTHONY WATERER, Knap Hill, near Woking, Surrey. The Knap Hill Nurseries have a world-wide reputation, and every American with a taste for horticulture, who visits England, makes it a point to visit the remarkable collection of conifers and rhododendrons, and other "American plants" to be found at this nursery.

WAITE, BURNELL, HUGGINS & Co., London. This is one of the heavy seed houses of the world, and sends out only wholesale prices current.

FRANCE.

CH. HUBER & Co., Hyéres, Var. This is one of the largest establishments in France for the production of flower seeds and the seeds of ornamental trees. Its 29th annual trade catalogue gives an astonishing variety, they send also a special list in English.

The Advantages of Keeping Accounts.—"F. G. F.," Genesee Co., N. Y., writes: "I have spent a large portion of my life on a farm, but feel as though I was just beginning to learn to farm. Three years since I kept an account, and found what crops cost me, and found I could not afford to raise poor ones. I sell my potatoes at 20 cents per bushel with a fair profit, while I know of fields every acre of which would bring the farmer 15 or 20 dollars in debt.

As to Patent Hay Rakes.—"M. E." Every different make of steel tooth rakes has some combination of parts, or some special part, that is patented. The elastic spring steel tooth is common to most kinds.

Turnips with Beans.—"R. W. W.," Perry, N. Y., writes that he planted eight acres of low, mucky land with red kidney beans. On the 20th of July, after cultivating the beans for the last time, purple-top strap leaf turnips were sown between the rows with a Holbrook hand drill. The beans yielded 21 bushels to the acre, and the turnips were a splendid crop. This being his first crop of turnips, is a very encouraging experience.

Dogs and Sheep.—"M. P.," Westchester County, N. Y., writes in reference to this troublesome question: "I propose that the *American Agriculturist* be a medium through which the sheep-raising and wool-raising question be discussed in relation to their greatest enemy, the dog. I would be willing to see all dog taxes removed, provided there was a law that every dog away from his master's premises should be muzzled. We have no right to prevent a person from keeping dogs on his own premises, or feeding them mutton either, but every dog off of his master's premises not muzzled, should be shot, and the person shooting said dog should be entitled to one dollar out of the funds of the town raised for that purpose. With such a law the farmer can keep sheep in any town, county, or state. It will prevent litigation, contention, or discord. The dog and sheep owners each having rights, will protect themselves by the letter of the law."—Our friend will find that this question is treated in a very practical manner in January. Farmers in nearly every state in the country are in a position to compel fair legislation on this question, and if they do not procure it, no one is to blame but themselves. One of the greatest difficulties is that the dogs which do most mischief are those owned by farmers, and they are the most careless of all in controlling them.

Value of Chicken Manure.—"C. R. B.," Bergen Co., N. J. If the manure is dry, and has been well kept, and the fowls have been fed upon grain, it ought to be worth about $20 a ton. Some market gardener in the neighborhood would probably purchase it. It is so rarely sold that there is no fixed market value for it. The value also greatly depends upon the manner in which it has been kept, as its ammonia is soon lost by exposure to the atmosphere.

Pork-Raising in Virginia.—A Virginia subscriber suggests the following method of raising pork in his locality, viz: to sow down different lots in clover, oats, southern peas and corn, and as the crops mature, to turn in the hogs to consume them upon the ground. Pork sells for 13 cents a pound, and very little is raised in the locality. Land can be purchased very cheaply, farms with buildings selling for $3 to $8 per acre.—Possibly this very rough method of making pork may be profitable as a commencement upon land so cheap as this, and may be made to serve a good purpose in improving the soil. If, however, a large, dry pen were provided and supplied with good water, and the crops were cut and fed to the hogs in it, and all the weeds, leaves, and rubbish of the land were to be gathered and thrown under the animals for litter, there would be a large gain. The loss of flesh consequent upon the hogs running about the fields would be prevented, and there would be a large saving in manure. There is no doubt that with pork at 13 cents a pound, and land at $8 an acre, there should be a good profit in raising pigs with a good kind, if they are well managed. One field should be reserved as an occasional pasture.

Right and Left.—A correspondent has got puzzled about right and left as respects the direction in which his hop-vines and bean-vines twine, and he asks us to tell him which is which, and why so. He reads, he says, that his pole beans "turn *against* the sun, that is from the left to the right hand of the observer," and that his hops "move like the hands of a watch, *with* the sun," *i. e.* from right to left. Now he says his watch does not do that, at least as a rule; for when the hands are at XII they move from left to right, and when at VI they then move from the right to the left of the observer. That reminds us of the student's examination, who, in reply to the question, whether the sun moved round the earth or the earth round the sun, *hedged* cautiously by answering "sometimes the one and sometimes the other." But, not to make fun of a serious matter—for there really is no little confusion growing out of the way in which these things are expressed in the books—let us help our worthy correspondent by asking him to put his watch down in a chair, face up, and see which way the hands move by walking round the chair in the same direction. He will perceive that he is turning to the left all the way round. If he walks around his hop-pole following the turning of the hop, he will do the same thing, but if he follows his bean-vine he will go the other way round. The confusion which has got into the books, in describing the turning of vines or the direction of overlapping or twisting of parts, has come from two different ways of looking at the right and left. Linnæus and the writer our correspondent has got hold of, conceive of the observer as standing outside of the turning thing and following it round. That this is the more natural and the commoner view is clear from our calling a common screw, the thread of which rises from left to right, a right-handed screw. But the DeCandolles and many others take it the other way, and say that the bean turns from right to left, they either conceiving the thing itself to have a right and left, which cannot be so long as it has no front and back, or rather that the observer is placed within the coil. And if we were in the habit of viewing such objects from an inside view, their's would be the natural expression. Mr. Darwin, in his Climbing Plants, avoids any obvious ambiguity by not using the terms right and left—at least it is so where he speaks of the hop-vine,—but saying instead *with* the sun or *against*. And here the observer is most naturally regarded as inside, which is practically all right. But to an observer outside of the circle, the apparent revolution would be opposite.

Dikes and Ditches.—"W. W.," Mason Co., W. T. If a dike is well constructed with a ditch upon each side, a very good permanent fence may be thus made. The cheapest plan would be to cut the sods along the fence row and lay them up in two rows two feet apart, leaving a space between them. Then with one horse and a plow loosen the earth where the ditch will be, and throw it between the lines of sods with a shovel. There will be no necessity to use a wheelbarrow, as the earth will only need to be lifted from the ditch to the dike. Two men with a suitable machine to cut the sods ought to make the ditches, and lay up 7 rods of such fence in a day, the ditches being 3 feet wide and 2 feet deep, and the fence being 2 feet wide and 3 feet high between the sods. If anything is needed upon the dike to prevent trespass by stock, stakes or posts may be built into the dike 10 feet apart, and one or two wires stretched along the row. Such a fence would be safe and indestructible by winds or fire.

Fleas in the Barn.—"C. H. B.," Lancaster Co., Pa. When a barn is infested with fleas, there is probably some cause for it that might be removed. Poultry will sometimes stock a barn with such vermin when they are permitted to roost in it. If hogs are kept under it, or manure is allowed to accumulate about it, vermin will gather and soon stock it. If any such cause as this exists, it should be removed. Then when the barn is empty in the summer, it should be well cleaned out, a quantity of hot clear coals should be placed upon a heap of earth on the floor, and the doors being closed, a pound of sulphur should be burned upon the coals. After a thorough fumigation, the barn should be whitewashed inside.

Lime Kilns.—"W. E. K.," Lancaster Co., Neb. If lime is burned with fine soft coal, the ashes will be of no injury, and of little or no inconvenience. The fine slack coal that is thrown away at the mines or yards, may be used to burn lime. If the lime is carefully burned, there will be no cinders left. As good lime may be burned in the cheapest kilns, as in the most costly ones.

Circus Horses.—"J. W. M.," Queen Ann's Co., Md. The curiously spotted or patched horses, common in circuses, are of Arabian blood. Perhaps this is the reason why they are more docile and intelligent than common horses, as there is no horse that is so enduring, or that can be so easily trained, or is so tractable or gentle as the Arabian. There is no record kept of this breed.

Some Question as to the Management of a Dairy.—"Mrs. J.," Rockbridge Co., Va. Very good plans for spring dairy houses were given in the *American Agriculturist* for October, 1874. A fire in a stove need not injure the flavor of the butter if it is properly managed. It must not be permitted to smoke, but the draft should always be kept perfect. Nor would the heat from a stove injure a cement floor. A brick floor may be laid upon the cement for the stove to stand upon, or a square shallow pit may be left in the floor in which the stove may stand if injury is apprehended. Fine wire gauze is the best screen for the windows. The screens should be made in a frame to fit the sash so that they will slide up or down. The best cover for a milk crock is a cover of the same material, or a piece of flat tile or slate; wood is not desirable. The dairy should be well ventilated, but without drafts or currents of air. A large opening in the ceiling that can be wholly or partly closed by a trap-door and a cord would be advisable. The best dairy salt is either the English Ashton salt, or the Onondaga "factory filled" dairy salt. The latter is a home-made, equal to the foreign, and cheaper.

Ringing Pigs.—"Ed." Pigs may safely be ringed as soon as they are old enough to do mischief. If you had given your full name and address, and sent a stamped envelope, (a thing often neglected), we would have sent by mail the information you wished.

A Profitable Dairy.—"T. A. C.," Solsville, N. Y., sends us a statement of the yield of his dairy of 20 cows, from two to five years old: this was 5,012 lbs. of butter, which was sold at 40 cents per pound, producing $2,004.80. These cows have been bred with care for a number of years, and are of Short-horn descent, showing that the ancient good character of this stock for the dairy, may still be retained by care in breeding.

Indigestion in a Cow.—"R. O. B.," Fairfield Co., Conn. When a cow disgorges her food, it is a symptom of irritation in the stomach and indigestion, probably arising from the presence of too much acid. We would give her two drams of carbonate of ammonia, with one ounce of ground ginger in some scalded bran. This should be given once a day for a week. Afterwards she should have a little salt and pounded chalk to lick every day as long as she will take it.

Salt For Wheat.—"D. M. S.," Geauga Co., Ohio. Salt is generally sown upon wheat in the spring, as soon as the growth has commenced. One or two bushels per acre, are sown evenly over the crop. The effect is to stiffen the straw, and prevent the wheat from lodging, and sometimes it has the additional effect of producing a clear light colored grain. Some farmers sow as much as a barrel or 5 bushels to the acre.

Night Soil.—"E. C.," Somerset County. There is no good reason why the night soil of a town should be rejected as a fertilizer, but many reasons why it should be regarded as of great value. The prejudice against using it is a relic of ancient times, when even animals' dung, which we value so highly, and is so indispensable to us, was rejected as being "unwholesome." The "Five Points of Good Husbandry," a book written about 300 years ago, referred to the use of animal dung in this manner. Some consider the contents of privies as unfit to use. The truth is, that this matter is the richest of all animal manures, and if used upon grass lands or root crops, might enter into our agricultural system with great economy and a vast benefit to the public health.

How to Improve Land.—"N. M.," Shenandoah Co., Va. It is as vain to try to improve badly run down land without manure, as to attempt to fatten an animal without food. If there is no manure to be had, it is almost hopeless to expect to improve exhausted land by growing crops to plow under. It is not always safe to trust to lime or plaster. If the soil happens to be abundantly supplied with every other necessary ingredient, except lime or sulphuric acid, then lime or plaster may be useful. If the soil has still heart enough left to produce clover, there is a favorable prospect for its gradual improvement, by growing this crop and plowing it under. In this case 100 lbs. of plaster, sown upon the clover when it is young, may be very beneficial. When clover can not be grown, buckwheat may be tried as a substitute, until two or three crops have been turned under. It will perhaps be cheaper in the end, to purchase manure or such a fertilizer as guano, than to wait for the slow process of improving land by means of buckwheat.

A Preventive of the Heaves in Horses.—"C. W. N.," New Bedford, Mass., sends the following prescription for a mixture which he has used successfully as a preventive and cure for the heaves and a cough in his horses. It is one pound ground ginger, one quart of salt, 4 ounces hard wood ashes, 2 ounces ground black pepper, and one ounce each of pounded rosin and salt peter. The whole is mixed together, and a table-spoonful is given in the feed twice a day, to a horse that coughs, or breathes with difficulty.—A cough or difficulty of breathing, similar to what is called the "heaves," frequently occurs from indigestion, and the production of gas in the stomach or bowels. The above mixture would have a beneficial effect in such a case, but no use when the trouble exists in the lungs.

Planet Jr. Double Wheel Hoe—1st Hoeing.

ALLEN'S PLANET Jr. Silver Medal Seed-drills

AND WHEEL HOES PERFECTED FOR '76.

They "SOW *like a charm*;" *no packing* of seed in the hopper, *no crushing* it, *no difficulty* with *chaffy* or *soaked* seeds, *no watching, no pausing* or *waste* at the ends, *no irregularity* in depth, *no skips, no springs* or *gearing* to wear out, *no noise*, NO EQUAL. No. 2, holds 2½ qts.—No. 3, holds ½ bush. and sows Fertilizers.

THE COMBINED machine, the AGRICULTURIST PREMIUM, (see Premium List), holds 1 qt., and "*is a perfect seed-sower.*" It has one pair of hoes for general work, one for heavy furrows, a plow and subsoiler. THE DOUBLE WHEEL HOE (see cut) works *easier, better, and six to twelve times faster* than the hand hoe. Wheels can be set two, six, or ten inches apart. It has three different pairs of hoes, and a pair of subsoilers; ALL our blades are steel, tempered and polished. Will work 6, 9, or 10 inch ROWS, TWO AT ONCE, *often saving cost in a day.*

Our NEW polished steel blade HORSE HOE, perfected after ten years of experiment, and trial by our S. L. Allen, a practical farmer. *Saves* most of the hoeing, and *makes the remainder easy*; leaves the ground *level or ridged* as desired, *opens furrows, hills*, and cultivates shallow or deep, and is a thorough weed killer. Especially adapted to the wants of *Market-Gardeners, Broom Corn, Tobacco, Cotton, Rice, and Root* Growers, and all lovers of thorough work: should be owned *by every farmer*. Send for cuts with full description and testimonials, free. *Mention this paper.* S. L. ALLEN & CO., Sole Manfrs., 119 S. 4th St., Phila., Pa. **We must have A LIVE AGENT in every town.**

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Best Proportioned,

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In use and for sale in nearly every

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"CHAMPION" HOG RINGER, RINGS, and HOLDER.

The only Ring invented that will effectually prevent Hogs from Rooting. Being a Double Ring, and having no sharp points in the flesh, it does not cause irritation or soreness, as in other Rings. The smooth part of the wire being in the nose, it heals rapidly. One of our rings being equal to two or three of any other ring, makes this ring cheaper than the cheapest. Time and money saved in using the Champion. One operation, and the work is done.

Price of Hog Ringer, 75c. each; Coppered Rings, 50c. per 100; Tinned Hog Rings, 60c. per 100; Hog Holder, 75c. each.

CHAMBERS & QUINLAN, Exclusive Manufacturers, Decatur, Ill.

ASK YOUR DEALER FOR THEM.

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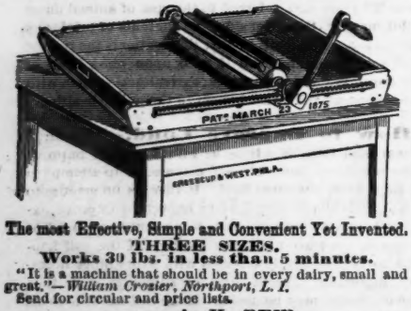
(PATENTED JUNE 29th, 1875.)

Made entirely of Cast Iron and lined with Porcelain. Milk discharge pipe does not pass through the water. Pan is easily removed from vat. Water in vat regulated to any hight. Will be ready for sale in January, 1876. Agents wanted for State of New York. Apply to

LEWIS W. CENTRE, Gen. Agent.

Delhi, Delaware Co., N. Y.

BUTTER WORKER.



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THREE SIZES.

Works 30 lbs. in less than 5 minutes.

"It is a machine that should be in every dairy, small and great."—*William Crozier, Northport, L. I.*

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Fast grinding. Small power. 20 patents for grinding and bolting. 30 years a specialty. Grinds with hand, horse, wind, water or steam power, any vegetable or mineral. Send stamp for cuts and prices.

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USEFUL FARM TOOL.

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FOR 16$ Fan blowing—no bellows. Weld—2-inch iron. Send 2-cent stamp for Catalogue to

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Crushes all hard and brittle substances to **any required size.** Also, any kind of STONE for ROADS and for CONCRETE, &c. Address BLAKE CRUSHER CO., New Haven, Conn.

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Portable Engines and Boilers, Vats, Hoops, Presses, Screws, Cans. Every article needed in Cheese Factory or Creamery. Send for Circulars.

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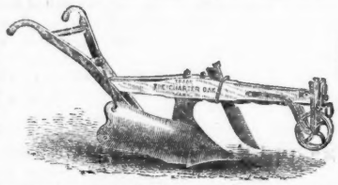

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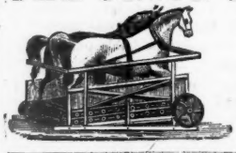

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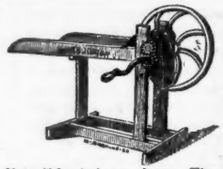

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I have also invented the best, cheapest, and **easiest worked** Turnip, Pumpkin, Potato and Carrot Cutter. The $13 size, turned by a boy, easily cuts a bushel in less than two minutes. You are not required to pay for any of my cutters until tried on your farm and found entirely satisfactory, and that all I claim for them is true. **I make allowance** for freight. Circulars free. See November number *American Agriculturist.*

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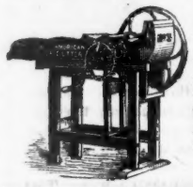

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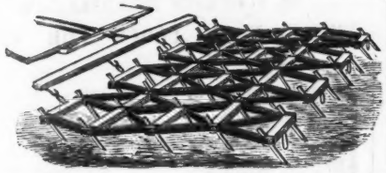

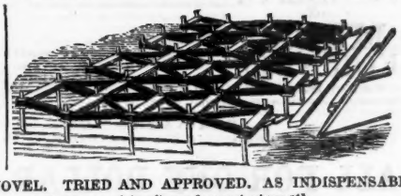

THE KING OF HARROWS. NEW AND NOVEL. TRIED AND APPROVED. AS INDISPENSABLE TO THE FARM AS A PLOW. Its peculiar construction *insures lightness of draft, and great strength.*

Is universally admired; the common expression is, "*Just the thing we have been looking for.*" Sells at sight, as it supplies a want long felt, viz.: A perfect smoothing Harrow, combined with a first-class vertical or straight-tooth Harrow, at a price usually charged for a smoothing Harrow. By drawing from one side, (as shown in the cut), we have a four section hinged 40 steel-tooth Harrow, and by simply changing the draft to the opposite side, we have a perfect Smoothing Harrow. We also manufacture for the West a Harrow of the above description in 6 sections, for four horses abreast, which covers 18 feet of ground in width. Send for Descriptive Circular to

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GARDEN ENGINE AND FIRE EXTINGUISHER.—For Washing Windows, Carriages, etc. Protects Buildings from Fire, and Trees, Vines, etc., from Insects. Throws water 50 ft. Easily carried. No Dwelling, Country Home, or Factory should be without the Fountain Pump. Send for large Illustrated Circular. J. A. WHITMAN, Sole Proprietor and Manufacturer, Providence, R. I.

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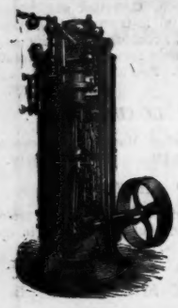

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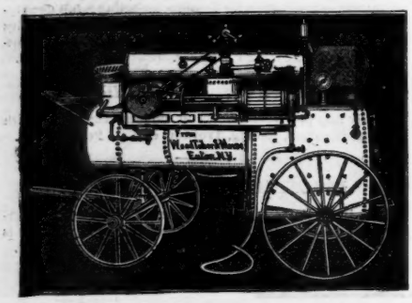

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